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MASTER’S THESIS

MANAGEMENT OF LOAN-LOSS PROVISIONS IN MICROCREDIT ORGANIZATIONS: THE CASE OF THE FEDERATION OF BOSNIA AND HERZEGOVINA DURING THE PANDEMIC

Ljubljana, December 2023

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LIST OF ABBREVIATIONS

ABRS; Banking Agency of the Republic Srpska

AROA; adjusted return on assets

BAM; Bosnia-Herzegovina Convertible Mark

CBBIH; Central Bank of Bosnia and Herzegovina

CLR; Central Loan Registry of the Central Bank of Bosnia and Herzegovina

EIR; Effective Interest Rate

FBA; Banking Agency of the Federation of Bosna and Herzegovina

IFRS; International Financial Reporting Standards

IMF; International Monetary Fund

LIP; Project of Local Initiatives

LLR; Loan Loss Provisions

MCC; Microcredit Company

MCF; Microcredit foundation

MCO; Microcredit organisations

MFC; Microfinance Centre

MFI; Microfinance institution

NIR; Nominal Interest Rate

NPL; Non-performing loans

PAR > **30;** Portfolio at risk over 30 days

ROA; Return on assets

ROE; Return on equity

1 INTRODUCTION

The financial market represents a transmission mechanism for lending funds from those who have available funds to those who lack those funds for the implementation of certain activities. Also, the financial market can be defined as the space where the supply and demand of financial activities meet (Hadžović & Džafić, 2011). On the financial market of Bosnia and Herzegovina (B&H), most of the transactions are carried out through banks, which mostly deal with classic banking transactions. In addition to banks, specific financial institutions appeared on the financial market of Bosnia and Herzegovina that can only perform lending activities (World Bank, 2005). These are microcredit organizations.

Microcredit represents financial services created in countries and regions where there is a high proportion of the poor population, as a rule, unemployed and without permanent sources of income (Welle-Strand et al., 2010). Their position and material condition are most often the result of war and other transition processes that cause disruptions of an economic and social nature. Significant development of microcredit organizations (MCO), as well as micro crediting in Bosnia and Herzegovina, began in 1996 (World Bank, 2001). Entity laws regulate the business of microcredit organizations. They were then defined as non-deposit and non-profit organizations whose only permitted activity is the granting of microcredits to socially disadvantaged persons with the aim of developing micro-entrepreneurship (FBA, 2006). The legal framework for microcredit organizations does not permit other activities.

A crisis has happened before in microfinance, but Covid-19 is different. Unlike past recessions, which started in the financial markets, an invisible virus that is hard to stop and contain spreads the Covid-19 crisis. The virus not only jeopardizes the regular performance of business activities, but it also kills people at a rate that has not been seen in a century. It causes trouble in the community and changes how we live and work. In 2008, the crisis started in the US real estate and financial markets. It took some time for the crisis to spread to the rest of the world's financial and real economies. The Covid-19 pandemic has a more extreme and sudden effect and is spreading very quickly. It has limited the real economy to have continuous operations, suffocating both supply and demand on the market at the same time.

Many micro- and small-sized businesses were ordered to stop operating or to find other ways to reach customers and sell their goods and services. Many small businesses, some of which were clients of MCOs, have stopped doing business or shut down, leaving their owners and employees without income and employment. This put a lot of stress on microfinance institutions, which had to deal with their own problems to keep doing their main jobs during lockdowns and rules about staying away from people.

In an effort to slow the spread of Covid-19, social isolation and other restrictions have resulted in sharp declines in economic activity as businesses were ordered to close during lock down and workers were ordered to stay at home, although some continued to work on a limited scale. People were required to isolate themselves and avoid participation in public gatherings for an extended period. These drastic and unavoidable measures had a significant impact on the domestic demand for goods and services and diminished the domestic supply (Bošnjak, 2020). They have disproportionately influenced the self-employed and micro-entrepreneurs, who make up the majority of microfinance institutions' clients in Bosnia and Herzegovina.

The objectives of this master’s thesis are the following:

- to present the regulatory framework for credit risk management of microcredit organizations prior to the pandemic in Federation Bosnia and Herzegovina,
- to understand the importance of the rules that are determined and defined in the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19 and its effects on key portfolio indicators,
- to determine the impact on key indicators of microcredit portfolio quality of Decision and evaluate the impact of temporary measures on the formation of reserves for the coverage of MCO loan losses through the application of special credit risk management rules aimed at mitigating the negative economic consequences of the viral disease Covid-19 epidemic for clients of organizations that are directly or indirectly affected by the epidemic.

This master's thesis presents the regulatory framework for credit risk management of microcredit organizations prior to the pandemic, as well as the effects and impact of newly adopted rules introduced in the Decision on temporary measures for leasing companies and microcredit organizations to ensure economic recovery following the Covid-19 pandemic. Impact of regulatory decisions on the business of MCOs, assessments, and expectations regarding credit risk and the quality of the loan portfolio through managing and controlling the cost of impairment and provisions due to the potential delay of clients in repaying past-due obligations in order to preserve capital, liquidity, and profitability of microcredit organizations will be topic of thesis.

The following research questions have been established to achieve the purpose and objectives of the master's thesis:

RQ1: What are the regulatory decisions and regulations to manage the credit risk of microcredit organizations in a pre-pandemic economic environment?

RQ2: What do the regulatory adjustments and regulations bring to MCO to control the credit risk and ensure recovery from negative economic consequences caused by Covid-19?

RQ3: What are the effects and impacts of the application of the risk management rules in the pandemic on the key indicators of microcredit portfolio quality: portfolio at risk over 30 days, write-off ratio, and provision for loan losses (loan impairment provision)?

This research methodology incorporates both theoretical and empirical components. The master's thesis is composed using the descriptive, normative, comparative, and method of content analysis in response to the research questions. The descriptive method will be used to describe key terms and phenomena associated with the operations and key parameters of the microcredit sector, as well as their connections and relationships. The normative method will be used to analyze the legal framework and content of the legal norm for microcredit organizations, with an emphasis on special rules of percentages and methods for forming and maintaining reserves for the coverage of loan losses by microcredit organizations, as well as the modification of the legal and institutional framework during a pandemic year. Through comparative and content analysis, key credit portfolio indicators and their impact and effect on balance sheet items will be presented. Using these methodologies, the significance and effects of regulatory changes during and after the pandemic will be presented.

The master's thesis consists of seven main chapters. Section one discusses the reasons and initiatives for starting a microcredit program in Bosnia and Herzegovina, as well as the significance and impact of microcredit organizations on the economy. The research's initial theoretical foundations were based on relevant literature and a collection of academic sources and research papers obtained from reports, published in journals and books.

The second chapter presents the legal and institutional framework of microcredit organizations based on the normative presentation of the Law on Microcredit organizations. Following was a presentation of the legal and regulatory framework of risk management in microcredit organizations, with a focus on the Decree on the percentage and method for forming and maintaining reserves for the coverage of loan losses by microcredit organizations (FBA, 2007) as the only legal regulation on credit risk management in the microcredit sector. This chapter, also, presents the Decision on requirements and other operating standards and limitations for microcredit organizations (FBA, 2018) in order to comprehend and summarize the research topic and all with the aim of understanding credit risk management in microcredit organizations.

The third section presents the operations of microcredit organizations from 2015 to 2019 in order to facilitate a greater understanding of their operations during the pandemic 2020 year. The Federation Banking Agency's decision on temporary measures and special rules for credit risk management during the pandemic period is presented in Chapter 4, followed by a comparison and explanation of the activities and special measures provided by this decision, particularly with regard to temporary measures and credit risk management methods. This part has put a spotlight on the regulatory decisions that would need to be made in the circumstance of a pandemic, as well as the effects and consequences on key credit portfolio indicators.

Chapter 5 refers to the collection, selection, grouping, presentation, and analysis of information and data in the pandemic 2020 year, as well as the interpretation of the results of the conducted analysis, all with the goal of achieving the research objectives. Collected data were used as inputs for quantitative and qualitative-descriptive analysis. Continuing to Chapter 5, in Chapter 6, the work and business outcomes of the microcredit industry following the pandemic are presented in the period 2020-2022.

Empirical analysis of methodology and results are presented in Chapter 7. The empirical part of this thesis analyzes data from the information/reports on the banking system entities of the Federation of Bosnia and Herzegovina, which include comprehensive figures of all performance indicators in the microcredit sector. In addition, a simulation of the balance sheet and calculation of the write-off (delay in repayment over 180 days) of the portfolio quality indicator were performed to confirm the purpose and objective of the master's thesis in this section and to determine the significance and role of making a modified and adapted decision on credit risk management.

The Reports are based on collecting data of all microcredit organizations in the Federation of Bosnia and Herzegovina, which include the analysis reports on business operations, information, and data submitted by microcredit organizations. For the purpose of analysis, comparison, and making conclusions, the data that was provided in annual reports for the period of 2015-2022 are used.

2 MICROCREDIT ORGANIZATIONS IN BOSNIA AND HERZEGOVINA

2.1 The reasons and initiative for starting a microcredit program in Bosnia and Herzegovina

Microcredit organizations (MCOs) were established in Bosnia and Herzegovina in 1996 as part of the project of the World Bank's local initiatives (Dunn, 2005). During this period, the state and citizens of Bosnia and Herzegovina were faced with poverty, diminished economic, material, and human potential, as well as economic and social disruptions brought it by the war in Bosnia and Herzegovina (World Bank, 2001). This typical picture of an economically ruined system engendered the creation of specific supply of financial services - microcredit.

Transitional recession and war decreased the population's standard of living (Welle-Strand et al., 2010). A large number of workers were laid off because of company reorganization or closure, resulting in negative social consequences. Strong, self-sustaining, and socially economic growth should have led to an improvement in social conditions and a decrease in poverty.

Estimates of new employment were based on private capital and individual initiative, which in the past, but also in the present, represented opportunities for new rapid employment, as well as employment and inclusion of returnees and displaced persons through self-employment and creating conditions for the development of small and medium-sized enterprises (Demirguc-Kunt et al., 2007). It was anticipated that the creation of new jobs based on self-employment and the development of micro-enterprises would play a crucial role in reducing unemployment, thereby improving the social image of society as a whole. Greater financial investments were required for a quicker start-up, dynamisation of production, and reduction of poverty, particularly in the development of small and medium-sized enterprise and the economic reintegration of Bosnia and Herzegovina's territory.

Small and medium-sized enterprises should have an important place in the economic structure of Bosnia and Herzegovina, and a significant share in the increase of total production, exports, employment, and living standards of the population (Dunn, 2005). Small and medium-sized enterprises constitute the most vital and often the most efficient segment of the country's economy, at the same time contributing to the modernization of production and the provision of services through the transfer of technology and managerial knowledge, thus increasing the competitiveness and efficiency of the domestic economy.

All of the above indicated that in Bosnia and Herzegovina there the rapid development of the financial market is necessary, which would play a key role in creating new jobs and maintaining existing ones. The increased availability of loans as a key financial instrument in the financial market in B&H, for starting or possibly expanding a small business, and providing for the unemployed, as well as people with low incomes, will cover the existential needs of their households and further progress in creating the best possible environment for the development and prosperity of their families. available to the population category defined above (Welle-Strand et al., 2010). The aforementioned initiative was implemented by establishing specific financial institutions, and microcredit organizations, which aimed to facilitate access to financial resources for individuals, and micro, small and medium-sized enterprises for starting or expanding business activities.

2.2 Project of Local Initiatives

The project of local initiatives - LIP I was established in 1996 as part of the overall assistance provided by the World Bank for the post-war recovery and economic reconstruction of Bosnia and Herzegovina (World Bank, 2001). The first Project of Local Initiatives was implemented through the Department of Local Initiatives within the Foundation for Employment, Training and Public Works, established by the Government of the Federation of Bosnia and Herzegovina and the Government of the Republic of Srpska. Although these two foundations operated on the territory of two entities and were thus administratively separated, the cooperation between them always supported the creation of a single economic space throughout Bosnia and Herzegovina.

In its reports, the World Bank describes the objectives of the initiatives, which can be categorized into three groups:

- to provide access to loans to those people, entrepreneurs with low incomes, who do not have access to loans from commercial sources, primarily banking,
- to facilitate the development of independent, financially sustainable microcredit organizations that will continue to provide long-term loans to low-income entrepreneurs, and
- to create an appropriate regulatory and legal framework for providing loans and savings services to low-income entrepreneurs.

The above goals have been exceeded multiple times, and it can rightly be stated that the Local Initiatives Project - LIP I is one of the most successful projects financed by the international community in Bosnia and Herzegovina (World Bank, 2005). The overall development purpose of this project was to respond to urgent needs to increase the level of income, develop businesses and encourage employment in Bosnia and Herzegovina, through the provision of microcredit and other financial services to clients with low incomes (Dunne, 2005). This was to be done in two specific ways, (World Bank, 2005):

- financed the growth and institutional development of high-performance microcredit organizations that had the capacity to serve a significant number of low-income clients considered unbanked by mainstream commercial banks, given their low incomes and limited fixed assets, and
- supported the transition of microfinance sector according to sustainable sources of financing.

Microcrediting emerged as a means of mitigating the negative effects of various natural, economic, and social disturbances and their associated consequences. Throughout the postwar period, the state and citizens of Bosna and Herzegovina faced enormous poverty, diminished economic, material, and human potential, as well as incalculable economic and social disruptions caused by the war (Welle-Strand et al., 2010). This typical picture of economically ruined system engendered the creation of this specific supply of financial services.

The absence or lack of banks and similar financial institutions in developing countries has conditioned the growing presence of MCOs in these markets (Eyiah, 2001, p. 511). Because microcredit organizations incur disproportionately higher administrative and operational costs than other types of financial institutions as a result of the small and short-term loans that are not secured by collateral (Cull et al., 2009), they must charge a high interest rate to cover the costs of lending to cover their operating expenses (Hartarska & Nadolnyak, 2007). Yunus (2010) defines microfinance as a social enterprise that aims to reduce poverty by giving microcredit to poor people so they can be self-employed.

2.3 Significance and impact of microcredit organizations on the economy in B&H

Muhammad Yunus, a Bangladeshi economist, and the Grameen bank he founded were awarded the 2006 Nobel Peace Prize for helping millions of people worldwide escape poverty. In 1976, Yunus established the Grameen Bank, which provides microcredit to the poorest in Bangladesh, particularly women, in order to assist them in launching a business. These were the beginnings of microcredit's development.

The development and growth of small and medium-sized businesses and entrepreneurship is one of the essential conditions for launching economic growth (Čičić & Šunje, 2002). Small businesses and entrepreneurs with varying needs at various stages of business development face obstacles associated with limited access to the financial resources required for start-up, survival, and growth. A healthy, formal financial sector is one of the prerequisites for the development and growth of businesses.

Within the context of creating a more favorable legal environment and providing micro financial support instruments, the emphasis of entrepreneurship development should be placed on providing the necessary support to aspiring entrepreneurs. Microcredits are the most acceptable type of financial arrangement for launching and growing a business, as they are most readily available to entrepreneurs who are just beginning their venture (Hartarska & Nadolnyak, 2007a).

The economic and social effects of the microcredit sector are very important for the economies of Bosnia and Herzegovina (Augsburg et al., 2015). The development is largely based on the start-up of micro and small entrepreneurship, which is of particular importance for providing access to finance to citizens who cannot meet the conditions for lending in commercial banks. Therefore, microcredit organizations are important and make a special contribution to the overall socio-economic recovery and development of Bosnia and Herzegovina (UNDP, 2009). According to relevant international institutions, the microfinance sector in B&H is one of the most developed in the world (Microfinance Centre, 2014). It is critical to note that microcredit organizations in Bosnia and Herzegovina have placed nearly nine billion convertible marks in recent years (FBA, 2020).

The 2008 Global economic crisis had significant effects on both the global and Bosnian financial markets, resulting in a decline in the activities of all financial institutions in Bosnia. Nevertheless, based on the structure of activities, i.e., the fact that MCOs can only hold microloans in their assets, unlike other financial institutions, MCOs exceeded the amount of activity in the post-crisis period, supporting the notion that MCOs made an incalculable contribution to the development financial market.

Due to the strengthening of its internal capacities, particularly in the areas of internal controls and assessment of the creditworthiness of users, MCO was able to stop the trend of asset decline, which was also typical of other financial institutions (except for insurance companies, where asset growth was observed) following the turbulent recessionary period. MCOs have a social impact; therefore, the impact of MCOs on microcredit users, on changes in household income of microcredit users, and on employment of microcredit users through self-employment is being observed and studied.

Microfinancing is a proven method for reducing poverty and creating new employment opportunities (Ajit & Anu, 2012). The objective of microcredit organizations is to provide permanent, sustainable funding to entrepreneurs who are unable to obtain funds from banks because they do not fulfill banks' standards, do not have a credit history, or do not satisfy other conditions set by banks. Individuals with entrepreneurial skills but lack capital can create their own firms with the support of microcredit.

3 THE LEGAL AND INSTITUTIONAL FRAMEWORK OF MICROCREDIT ORGANIZATIONS

3.1 Law on Microcredit Organizations

The regulatory approach to microcredit differs from country to country due to diverse factors related to history, economy, and financial system development. Recognizing that some key elements related to the banking law are set at both the European and national levels is critical to understanding the regulation that applies to non-bank MFIs in the provision of microcredits. The earliest legislation on microcredit was introduced in France in 2001, followed by B&H (2006) and Kosovo (2008) (Ruesta & Benaglio, 2020).

MCOs in Bosna and Herzegovina were founded by non-governmental, mostly humanitarian organizations, citizens' associations, and natural persons being registered founders of MCOs, but without right over the capital. MCO in Bosnia and Herzegovina is characterized by one financial instrument, microcredit, which aims to improve the social status of users through increased income, employment, and improved living standards.

Microcredit regulation is different by country. In Bosnia and Herzegovina, the legislation establishes the scope and rules for microcredit provision. The MCOs in Bosna and Herzegovina are specialized microcredit providers that can operate only under certain conditions established by the law. In Bosnia and Herzegovina, the regulation consists of a single law that covers the provision of microcredit in the country.

Law on Microcredit Organizations stipulates the establishment, registration, activity, form of organization, the operations, method of governance, termination of operations and the supervision of operations of microcredit organizations in the Federation of Bosnia and Herzegovina (FBA, 2006). In the existing regulations on microcredit, the legislator established rules that facilitate or prevent the creation of new MCOs and influence the business model for MCOs wanting to operate in the market.

"Microcredit organizations in Bosna and Herzegovina are registered as the nonprofit and nongovernmental organizations which do not collect deposits, and whose key activity is the provisioning of micro-credits to socially endangered population, with a goal of developing entrepreneurship" (Dunn, 2005). MCO is a legal person that, in accordance with regulations, can be established and operate business as a microcredit foundation (MCF) or microcredit company (MCC). In this context, a microcredit foundation can be created with a relatively modest equity base (BAM 50.000) while microcredit companies, which are of a commercial nature, need ten times more capital to start operations.

In Bosnia and Herzegovina, the maximum amount for a microloan is set according to the legal type of the MCO. As a result, microcredit companies can offer loans that are five times larger than microcredit foundations. Microcredit is a credit disbursed in amounts up to BAM 50,000 offered by a microcredit company or BAM 10,000 by a microcredit foundation (FBA, 2006).

The MCO's mission is the continuous provision of microcredit services to the economically less developed category of citizens while facilitating and supporting self-employment, income generation, financial stability, and the creation of better living conditions. Because of the specific objectives established before microcredit organizations at the start of their activities, their contribution to the development of the financial market cannot be observed internally (Vujić, 2008, p. 147, 148), following only the parameters that characterize their operations, but must be compared with the parameters of the impact on microcredit clients. “Nonprofit organizations have a greater social goal, not just making a profit" (Kotler, 1996).

Microcredit organizations place loans through direct sales, which means that the sale of loans and the collection of monthly payments are done primarily through personal contact between loan officers and clients. This process maintains monthly business relationship, but rather the monthly business relationship between the microcredit organization and the client, which will include technical assistance and financial education for the client.

MCO provides funds from banking institutions and specialized funds for MCO lending. The terms of borrowing funds impact the level of MCO operating costs and, the level of the output interest rate, and as a total result.

3.2 Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations

During 2006-2007, both regulators in B&H, the Banking Agency of the Federation of Bosnia and Herzegovina (FBA) and the Banking Agency of the Republic Srpska (ABRS), enacted Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations with the same content to the percentage and the manner for forming and maintaining reserves (FBA, 2007). The basis for the calculation of the percentage of reserves referred is composed of the unrepaid loan amount, accrued interest, and fees, as well as all other items causing the MCO to be exposed to a risk of impossible collection, i.e. business failure.

MCO is obliged to distribute the amount of loan and accrued interest in groups, on a monthly level, applying the criteria of days overdue in loan repayment (FBA, 2007), and is obliged for each group to set aside reserves for the coverage of loan losses and increase expenses in the Income Statement. The Banking Agency of the Federation of Bosnia and Herzegovina has made a decision that excludes the subjective factor and does not apply IFRS 9 (IFRS, 2021), if the only risk factor is number of days that client is in delays on the last day in the month. In the Federation of B&H, all microcredit organizations have developed software that divides them into groups based on delay counters according to the decision determined by the percentage of provisions. Regulatory decisions are the key documents for credit loss provisions (FBA, 2008).

The Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations stipulates the percentage and the manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations (FBA, 2007). This decision is crucial for the microcredit industry's credit risk management. Aside from this, there is no other legal framework, and subjective evaluation is not factored into the calculation, as the percentage of the reservation is exclusively dependent on the number of days overdue.

The basis for the calculation of the percentage of reserves is composed of unrepaid loan amount, accrued interest and fees, as well as all other items causing the MCO to be exposed to a risk of impossible collection, i.e. business failure (FBA, 2007). MCO is obliged to distribute the amount of loan and accrued interest in groups, on a monthly level, applying the criteria of days overdue in loan repayment (FBA, 2007), and is obliged for each group to set aside reserves for the coverage of loan losses and charge them to expenses according to the groups and reserve rates as shown in Table 1:

Table 1: Groups rates of provisions

No.	Days overdue	Rate of provision
1	0	0.00%
2	1–15	2.00%
3	16–30	15.00%
4	31–60	50.00%
5	61–90	80.00%
6	91–180	100.00%
7	over 180	Write off

Source: FBA (2007)

If accrued interests (regular interest, default interest) and fees are not collected within 15 days, the MCO is obliged to form reserves for the coverage of loan losses in a 100% amount of that receivable.

After bringing the legal proceeding, the MCO is obliged to remove all receivables due, but outstanding over 180 days, from the balance sheet and evidently keep them in off-balance sheet record until the payment of receivables is executed or until definite write-off (removal from business books) (FBA, 2007). MCO is obliged to maintain the repeated loan that represents the loan that is prolonged, restructured or in other way modified due to overdue repayment, with the same reserve rate for at least one reporting period and it is obliged to establish a system that will enable forming and maintaining reserves for the coverage of loan losses. Less performing portfolios pose a greater risk through reduced loan portfolio yield — the most important source of revenue for MCOs.

3.3 Decision on requirements and other operating standards and limitations in microcredit organizations

In order to understand the management of provisions for credit losses in microcredit organizations, the following text will explain the key parameters for monitoring the quality of the portfolio. Parameters for monitoring the quality of the portfolio in MCOs are essential for analyzing and evaluating its quality and impact on the financial result. Two indicators monitor the quality of the credit portfolio:

- portfolio at risk over 30 days (PAR>30) and
- write-off ratio.

The calculation, formation and monitoring of these indicators is carried out in accordance with the methodology prescribed by the regulation of the FBA by Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations (FBA, 2007) and Decision on requirements and other operating standards and limitations in microcredit organizations (FBA, 2018). As previously stated, when calculating these two regulatory standards, subjective evaluation is excluded completely, and they are determined strictly by the number of days overdue.

Decision on requirements and other operating standards and limitations in microcredit organizations prescribes regulatory requirements for microcredit organizations, microcredit foundations, and microcredit companies formed through a transfer/investment of assets of MCFs with respect to related entities, donated funds, and other business standards of MCOs and relevant limitations. In this Decision, the maximum deviation percentage for the following standards is defined: the 30 days portfolio risk is less than 5%, and write-offs are less than 3% (FBA, 2018).

In the event that MCOs do not comply with the standards that are prescribed, the FBA can prescribe measures to achieve the regulatory standards. The law and decisions do not prescribe revocation of the license in case of non-compliance with these standards.

3.4 Risk management in MCOs

3.4.1 Definition of risk management

In a world that is in constant change, MCOs have learned that it is reasonable to be prepared for unexpected events (risks) which usually occur unpredictably. Quality portfolio credit risk management is a key component of financial institutions and their functioning (Klepac, 2008).

Risk management is an integral component of financial services (Microfinance Network, 2000), and of microfinance, which results in profit as a reward for successful risk management in business. On the other hand, poor risk management can lead to losses and threaten the safety and stability of microfinance institutions. In that case, microfinance institutions would not be able to fulfill their social and financial goals (NBE, 2010). This implies that proactive risk management is essential for the long-term sustainability of microfinance institutions.

Microfinance institutions consciously assume risks while performing their role of financial intermediation in the economy. Consequently, they are exposed to a range of risks, which include credit risk, interest rate risk, liquidity risk and operational risk (NBE, 2010). Managing these risks is key to their survival and sustainability.

Goldberg and Palladini (2010) recognize the steps of the risk mitigation process as identifying the risk profiles, prioritizing, assessing, and defining the most important risks, designing policies and procedures to mitigate those risks, assigning responsibilities, testing the effectiveness, and evaluating the results, and improving the adopted policies when necessary. Ibtissem and Bouri (2013) investigated risk management in microcredit organizations by following the development of credit risk measurement mechanisms in MCOs. They have demonstrated how microcredit organizations can lend to the poorest segments of the population much more efficiently than traditional banks because MCOs employ a more effective approach to credit risk assessment by offering customized microcredit programs ranging from free assessment to statistical assessment.

3.4.2 Portfolio at risk adjustments in MCO

Microfinance has become a diverse and growing industry. As with any global industry, microfinance needs to accept standards by which MCOs can be measured. Microfinance institutions, regardless of their social mission, are financial intermediaries. As such, it is important to assess accurately the viability and soundness of MCOs as financial institutions. Adjustments also enable MCO to measure the true performance of an MCO and analyze its long-term viability by studying its ability to cover all costs.

An MCO's treatment of its portfolio at risk can have a major impact on its financial results. No international standards for these practices exist, although regulatory agencies and historical loan loss rates may provide some insight into the point at which loans should be written off, or how to calculate their Loan Losses Provision. If this is the case, regulatory standards must be followed when generating financial reports for regulators and auditors (Basel Committee on Banking Supervision, 2010). The purpose of these adjustments is for performance monitoring, to ensure minimum standards for the portfolio at risk are applied. Respecting regulatory requirements, MCOs must adjust for portfolio at risk.

The Loan Losses Provision is a type of adjustment for the value of the Gross Loan Portfolio to reflect the credit quality of the portfolio. MCOs should have a Loan Losses Provision policy that reflects their historical loss rates, perceived credit risk, and regulatory standards. The adjustment for Loan Losses Provision has great benchmarking value because its primary purpose is to impose a minimum standard.

An MCO's largest asset is its loan portfolio. Loan portfolio quality is a criterion for evaluating the performance of MCOs in MCO evaluation frameworks (Barres et al., 2005). “Risk is most easily defined as exposure to the possibility of loss. However, the risks do not always have to be “bad”. Sometimes it is necessary to take risks to achieve useful and significant goals” (Churchill & Coster, 2001, p. 2). This is especially true of microcredit organizations, where loan officers risk lending money every day to people with no credit history, no business books, and very often no collateral. It is apparent that the provision for loan impairment helps to assess the true profitability of an MCO.

The provision for loan impairment is the amount expensed in a period to increase the impairment loss allowance to an adequate level to cover expected loan portfolio defaults based on the historical default rate and the current outstanding impairment loss allowance. While provision for loan impairment is a non-cash expense, an MCO treats it as a direct expense (CGAP/World Bank, 2009). MCOs in Bosnia and Herzegovina use the same methodologies to calculate the loan loss provisions and the corresponding provision that must be charged to the MCO's income. MCOs establish a priori loan provisions that are calculated as a percentage of the loan portfolio outstanding at the end of each fiscal year. Along with the decision on the percentage and method of establishing and maintaining reserves for loan loss coverage, the regulator also makes a decision on the conditions and other business standards and restrictions applicable to the microcredit organization, which was previously explained in the text.

It is critical to apply regulator decisions and calculate provisions properly to avoid impairing asset quality and financial performance. These adjustments are made to monitor performance; they ensure that some minimum standards for the portfolio at risk are met.

4 MICROCREDIT SECTOR IN THE FEDERATION OF BOSNIA AND HERZEGOVINA BEFORE COVID-19, 2015-2019

At the heart of micro lending is the relationship between the Loan Officer and the micro-customer, whose funding needs are recognized, capacity and willingness to repay is assessed, and repayment performance is continuously monitored and managed after a loan is given. As the internal control and risk management environment of MCOs matured over time, the connection between the Loan Officer and the customer became subject to increased supervision and regulation, and decisions became more risk-based. From data collecting to credit decision-making, many MCOs have engaged in digitizing and automating their procedures, which has increased efficiency and decreased operational risks.

The method of financial information gathering is a crucial difference between MCO and banking credit risk management that should be emphasized at the outset. When deciding to extend credit to a business customer, a bank considers the borrower's accounting and financial management processes, which result in relatively reliable financial statements and projections, as well as good collateral with a realizable fair value and legal risks in general.

While assessing the creditworthiness of a micro-customer, an MCO must rely on the financial and socioeconomic information obtained by the Loan Officer. Additionally, quality collateral is not always available. In fact, prior to a decade ago, the MCO did not only approve "collateral-based lending" like conventional banks, but rather "cash flow-based lending." There were typically valid reasons for that. In numerous countries, MCO's target clientele lacked collateral assets.

Berryman & Pytkowska (2014) state that dynamic is the best way to describe the Bosnian microfinance sector. In addition, they claim that MCO's sector quickly reacts to the operating environment, competition from its peers, and changing demands from its clients. Its flexibility and speed have proven successful on almost all front, from scale to productivity and even efficiency.

In order to understand the subject matter of the master's thesis, the structure of the microcredit sector in the Federation of Bosnia and Herzegovina overview for the period 2015-2019, the years before the Covid-19 pandemic, will be presented at the beginning of this chapter. This will include data on the number of employees, the amount of assets, gross portfolio, capital, surplus (shortage) of income over expenses/net profit, and placements.

In addition, information regarding the total value of the portfolio (gross) as well as loan loss provisions made during the period of the previous five years will be supplied in order to highlight the consistent trend in the quality of the portfolio. The movement of the most important quality measures of the portfolio over the same period will be shown as supporting evidence for this point.

As previously stated, the quality of the loan portfolio is monitored by indicators: portfolio at risk over 30 days (PAR>30), write off of loans over 180 days, and provisions for credit losses, while the calculation, formation, and monitoring of these indicators are performed in accordance with the methodology prescribed by the regulation of the Federation of B&H Banking Agency, which is explained in detail in the previous text of the paper.

4.1 Status, Number and Business Network

As indicated previously, this chapter will present the MCO sector for the period 2015-2019, which should demonstrate that it is a stable, highly capitalized and liquid financial sector. Table 2 demonstrates the sector's strength and stability by presenting data on significant balance sheet positions and Income Statements. Additionally, capital ratio (equity to asset ratio), return on assets (ROA), and return on equity (ROE) indicators are presented in Table 3.

Microfinance financial institutions are double-bottom-line businesses, which means that they evaluate their performance based on both financial and social performance measures. Only financial indicators will be used for the purposes of this thesis. Cash amounts, placements to bank, microloans, provisions for loan losses, tangible and intangible assets, long-term investments, other assets, and reserves on other items in assets are all considered assets in microcredit organizations. Understanding the differences between microcredit and placement is crucial to comprehending the data that is being presented.

The placement in Table 2 shows the total amount of microloans approved and disbursed (the flow of disbursed loans during one year) over the reporting period, or one calendar year, whereas the portfolio shows the amount of microloans at the end of the reporting (specific) date.

Table 2: Aggregated information and key balance positions MCOs sector, at the end of 2015-2019

	Indicator	**2015**	**2016**	**Index**	**2017**	**Index**	**2018**	**Index**	**2019**	**Index**
		1	**2**	**3=(2/1)*100**	**4**	**5=(4/2)*100**	**6**	**7=(6/4)*100**	**8**	**9=(8/6)*100**
1	Number of MCO	12	12	100.00	12	100.00	12	100.00	14	116.67
2	Number of employees	1,200	1,251	104.25	1,399	111.83	1,461	104.43	1,522	104.18
3	Assets (BAM thousand)	423,314	440,141	103.98	526,927	119.72	580,353	110.14	631,298	108.78
4	Gross portfolio (BAM thousand)	355,371	377,872	106.33	411,154	108.81	456,920	111.13	508,301	111.25
5	Capital (BAM thousand)	193,294	207,638	107.42	255,060	122.84	272,869	106.98	294,316	107.86
6	Surplus (shortage) of income over expenses/net profit (loss) (BAM thousand)	16,309	16,415	100.65	18,568	113.12	20,953	112.84	19,489	93.01
7	Placements (BAM thousand)	348,065	371,673	106.78	402,308	108.24	449,672	111.77	482,678	107.34

Source: own work based on FBA (2016), FBA (2017), FBA (2018), FBA (2019), FBA (2020a)

As shown in Table 2 it can be concluded that the number of employees, assets, microcredit portfolio, and capital are consistently increasing. The average growth rate for portfolios and assets from 2015 to 2019 was 9.38 percent, whereas the average growth rate for capital was 9.8 percent. Figures illustrate continuous increases in all the shown measures on the operations of the MCOs and their growth and development while maintaining stability. Moreover, this trend confirms the mission and vision of the establishment and existence of the microcredit sector in the Federation of Bosnia and Herzegovina.

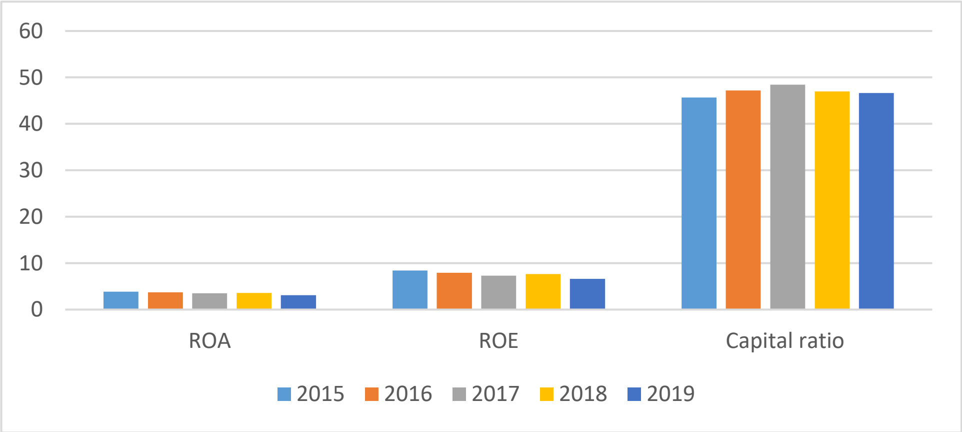
Table 3: Profitability indicators, 2015-2019

No.	Indicator	2015	2016	2017	2018	2019
1	Return on assets (ROA) (in %)	3.85	3.73	3.52	3.61	3.09
2	Return on capital (ROE) (in %)	8.44	7.91	7.28	7.68	6.62
3	Capital ratio (ratio capital/assets) (in %)	45.66	47.18	48.41	47.02	46.62

Source: own work

Furthermore, Table 3 provides an overview of the return on assets and capital indicators, as well as the capital ratio (ratio capital/assets). Based on this data, it is possible to conclude that the sector is stable and has a high capitalization index, in the period 2015-2019.

Figure 1: Profitability indicators, 2015-2019



Source: own work

As illustrated in Figure 1, indicators exhibited negligible fluctuations and that the trend remains relatively constant across periods. The inflation impact has been excluded from the calculations of these indicators due to the absence of substantial fluctuations in the inflation rate throughout the period under observation (Trading Economics, 2023). These indicators will be further examined and discussed in the following chapters, over the period, to provide a clearer picture of the trend.

4.2 Balance Sheet

The purpose of this part is to introduce the Balance Sheet for the period of five years, 2015-2019, in order to present MCOs in Federation B&H. As the main activity of MCO is micro crediting, special emphasis will be given to the overview and analysis of the microcredit portfolio and its ratio with the loan loss provisions. The balance sheet positions will illustrate the position and scope of MCOs as a financial institution. Table 4 presents the aggregate balance sheet for 14 MCOs that operate on the territory of the Federation of B&H microcredit sector for the period 2015-2019:

Table 4: Microcredit sector's balance sheet, at the end of 2015-2019 (BAM thousand)

No.	Indicator	2015	2016	2017	2018	2019
	ASSETS					
1.	Cash	32,894	26,723	46,830	57,398	48,877
2.	Placements to banks*	733	733	1,210	210	2,150
3.	Microloans	355,371	377,872	411,154	456,920	508,301
4.	Loan loss provisions	3,388	3,369	3,258	2,904	3,912
5.	Net microloans	351,983	374,503	407,896	454,016	504,389
6.	Tangible and intangible assets	28,032	28,849	28,813	26,669	33,253
7.	Long-term investments	3,061	3,061	33,061	33,061	33,061
8.	Other assets	6,798	6,463	9,305	9,170	9,826
9.	Reserves on other items in assets, apart from loans	187	191	188	171	258
Total assets		**423,314**	**440,141**	**526,927**	**580,353**	**631,298**
	LIABILITIES					
10.	Liabilities on loans**	208,355	207,908	245,996	279,682	301,743
11.	Other liabilities	21,665	24,595	25,871	27,802	35,239
12.	Capital	193,294	207,638	255,060	272,869	294,316
Total liabilities		**423,314**	**440,141**	**526,927**	**580,353**	**631,298**
13.	Off-balance sheet records	122,195	115,850	110,974	107,078	102,236

Notes:
* Placements to banks present MCOs' deposits in banks.
** Liabilities on loans present MCOs' liabilities for loans borrowed from banks and other financial institutions, which microcredit organizations utilize to provide loans to their clients and pay other obligations.

Source: FBA (2016), FBA (2017), FBA (2018), FBA (2019), FBA (2020a)

At the end of 2015, total assets amounted to BAM 423,3 million, while at the end of 2019 it was BAM 631,3 million (FBA, 2020). The average growth of assets for the mentioned period is 10.65 percent per year. In addition, for the observed period, the portfolio grew by an average of 9.38 percent per year , i.e. at the end of 2015, the portfolio amounted to BAM 355,3 million, while at the end of 2019, it amounted to BAM 508,3 million (FBA, 2016). It can be concluded, observing and analyzing the data listed in Table 4, that during the period 2015 - 2019 in the MCO sector, there is growth in all balance positions, particularly the credit portfolio, with a satisfactory amount of Loan loss provision. The presented data show that MCO has maintained a quality portfolio over an extended period that MCO in Federation of B&H is a stable sector with growth and expansion potential, and it continues that trend in the next period what will be shown by the data in the comparative period of 2019 - 2020 and 2020 - 2022. Data on portfolio quality and key regulatory standards will be presented in more detail below.

4.3 Microcredit Portfolio and Key Indicators of Microcredit Portfolio Quality

The largest share of assets in MCO is its loan portfolio. The quality of the loan portfolio is a key parameter for the healthiness of MCO. Two indicators measure loan portfolio quality: portfolio at risk over 30 days (PAR-30 days), write off ratio and consequently the provision for loan losses.

From Table 5, it can be concluded that in the mentioned period, 2015-2019, the credit portfolio, i.e. microloans, make up an average of 80.78 percent of total assets. The loan loss provision ranges from 0.64 percent to 0.95 percent per year, which is considerably less than the legal maximum, as shown in Table 5.

Table 5: Net micro loans, 2015-2019 (BAM thousand)

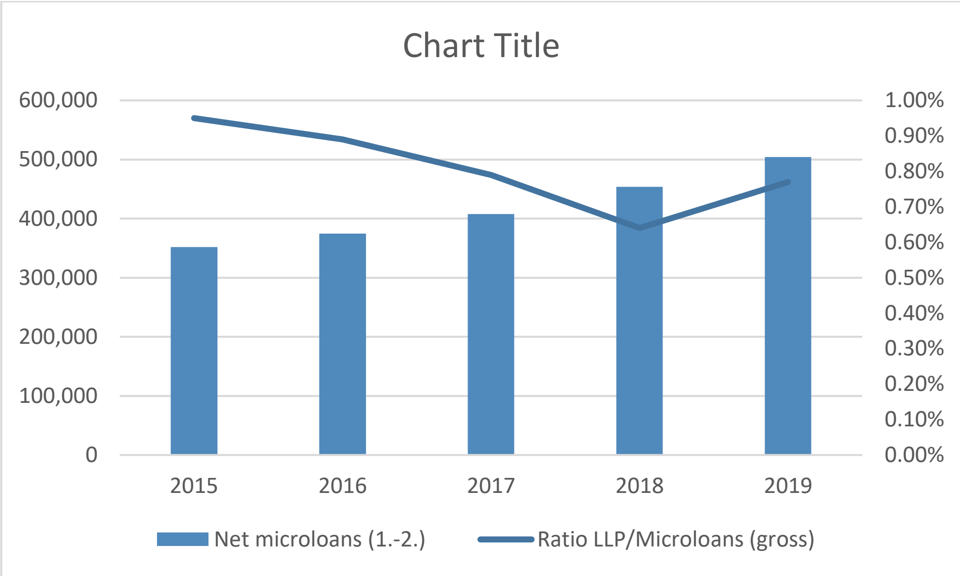
Indicator	2015	2016	Index 16/15	2017	Index 17/16	2018	Index 18/17	2019	Index 19/18
1. Microloans (gross)	355,371	377,872	106.33	411,154	108.81	456,920	111.13	508,301	111.25
2. Loan loss provisions	3,388	3,369	99.44	3,258	96.71	2,904	89.13	3,912	134.71
Net microloans (1.-2.)	**351,983**	**374,503**	**106.40**	**407,896**	**108.92**	**454,016**	**111.31**	**504,389**	**111.09**
Ratio LLP/Microloans (gross)	0.95%	0.89%		0.79%		0.64%		0.77%	

Source: own work based on FBA (2016), FBA (2017), FBA (2018), FBA (2019), FBA (2020a)

Compared to the end of the previous years, the microcredit portfolio saw an increase and recorded an improvement in quality indicators of the active loan portfolio. The loan loss provisions to the total loan portfolio ratio at the end of 2016 amount to 0.89% and recorded an improvement of 0.06 percentage points to December 31, 2015.

The improvement continues and there was a decrease in LLR at the end of 2017 and 2018. LLR is slightly worse at the end of 2019, which still does not significantly affect the health of the active portfolio. As illustrated in Figure 2, it can be concluded that the absolute amount of provisions for loan losses is approximately the same from period to period, which means that although the portfolio is growing (the average portfolio growth from 2015 to 2019 is 9.43%), provisions for credit losses remain at approximately the same level. From the above, it can be concluded that the MCO's portfolio is expanding and its quality is stable.

Figure 2: Net micro loans, 2015-2019



Source: own work based on FBA (2016), FBA (2017), FBA (2018), FBA (2019), FBA (2020a)

The tables 6, 7, 8, 9 and 10 provide a receivables with related provisions by groups according to the number of days in default, as well as data on outstanding overdue receivables over 180 days (being removed from the balance sheet), for period 2015-2019. In order to determine the portfolio in default more than 30 days, the data in Table 6 under serial numbers 4, 5, and 6 is utilized.

The PAR 30 portfolio quality indicator is obtained by aggregating the percentage of overdue portfolio (over 31 days) that is, when the total amount of the portfolio in default more than 30 days is compared with the total portfolio. In Table 6 it can be seen that the portfolio at risk over 30 days for the specified time period is BAM 3,780 million (FBA, 2016). When this amount is compared to the total portfolio value at the end of the period BAM 355,3 million, the indicator of the portfolio at risk over 30 days is 1.06 percent. This indicator is significantly below the regulatory requirement that the portfolio at risk over 30 days have to be below 5%.

Portfolio at risk over 30 days is calculated when the total amount of portfolio in default over 30 days is compared to the total amount of the portfolio at the end of the period, while a write-off is calculated when the total amount of the written-off portfolio is divided by the total portfolio.

Table 6: LLP - Loan Loss Provisions, December 31, 2015 (BAM thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions		Total provision
					Rate of provisions	Amount of interest	By microloans	By past due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1	0	0%	347,289	97.73	0%	5	0	0	0
2	1–15	2%	1,911	0.54	2%	36	38	1	39
3	16–30	15%	2,391	0.67	100%	43	359	43	402
4	31–60	50%	1,442	0.41	100%	42	721	42	763
5	61–90	80%	866	0.24	100%	31	693	31	724
6	91–180	100%	1,472	0.41	100%	71	1,577	71	1,648
Total			**355,371**	**100**		**228**	**3,388**	**188**	**3575**
7	Over 180	Write off	1,027	-	-	93	-	-	-

Source: FBA (2016)

In addition, the regulatory standard for write offs, which is determined by the decision to be below 3%, is 1.16 percent for the observed period. This standard is calculated by entering the value of write off and the total portfolio into the ratio. These two regulatory standards demonstrate the fundamental performance of the credit portfolio's quality.

Table 7: LLP - Loan Loss Provisions, December 31, 2016 (BAM thousand)

	Days in default	Rate of provision s	Amount of loans	Share (%)	Interest due		Provisions		Total provision
					Rate of provisio ns	Amount of interest	By microloans	By past due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1	0	0%	369,450	97.77	0%	265	0	0	0
2	1–15	2%	2,088	0.55	2%	30	42	1	42
3	16–30	15%	2,559	0.68	100%	46	384	46	430
4	31–60	50%	1,391	0.37	100%	41	696	41	737
5	61–90	80%	752	0.20	100%	30	602	30	632
6	91–180	100%	1,632	0.43	100%	74	1,646	74	1,720
Total			**377,872**	**100**		**486**	**3,369**	**192**	**3560**
7	Over 180	Write off	1,192	-	-	100	-	-	-

Source: FBA (2017)

Comparing with the percentage amounts of the portfolio at risk over 30 days and write-offs in 2015 from Table 7, it is concluded that both indicators decreased in 2016 and amount to: PAR 30 is 1 percent while the write-off is 1.11 percent. During 2016, both parameters of the portfolio quality improved (which is within FBA standards, PAR>30 days - below 5%, write off – below 3%).

Table 8: LLP - Loan Loss Provisions, December 31, 2017 (BAM thousand)

No.	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions		Total provisions
					Rate of provisions	Amount of interest	By microloans	By past -due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1	0	0%	403,130	98.05	0%	7	0	0	0
2	1–15	2%	2,006	0.49	2%	30	40	1	41
3	16–30	15%	2,371	0.58	100%	42	356	42	398
4	31–60	50%	1,284	0.31	100%	39	642	39	681
5	61–90	80%	776	0.19	100%	29	621	29	650
6	91–180	100%	1,587	0.39	100%	78	1,599	78	1,677
Total			**411,154**	**100**		**225**	**3,258**	**189**	**3,446**
7	Over 180	Write off	1,006	-	-	88	-	-	-

Source: FBA (2018a)

The portfolio quality trend continues in 2017, when the portfolio at risk over 30 days amounts to 0.89 percent and 1 percent for the write-off indicator (FBA, 2018a) which can be seen in Table 8. Both regulatory standards continue to fall short of the prescribed proportions.

Table 9: LLP - Loan Loss Provisions, December 31, 2018 (BAM thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions		Total provisions
					Rate of provisions	Amount of interest	By microloans	By past due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1	0	0%	449,655	98.41	0%	5	0	0	0
2	1–15	2%	1,904	0.42	2%	25	38	1	39
3	16–30	15%	2,078	0.45	100%	37	323	37	360
4	31–60	50%	1,243	0.27	100%	33	622	33	655
5	61–90	80%	602	0.13	100%	24	482	24	506
6	91–180	100%	1,438	0.31	100%	75	1,439	76	1,515
Total			**456,920**	**100**		**199**	**2,904**	**171**	**3,075**
7	Over 180	Write off	4,136	-	-	339	-	-	-

Source: FBA (2019)

As shown in Table 9, it is concluded that the percentage of the portfolio at risk over 30 days is 0.72 percent as of the end of 2018, while the write-off percentage is 0.95 percent (FBA, 2019). This trend confirms still high quality of portfolio in 2018.

Table 10: LLP - Loan Loss Provisions, December 31, 2019 (BAM thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions		Total provisions
					Rate of provisions	Amount of interest	By microloans	By past due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1	0	0%	498,565	98.08	0%	5	0	0	0
2	1–15	2%	2,713	0.53	2%	35	56	0	56
3	16–30	15%	2,645	0.52	100%	33	412	35	447
4	31–60	50%	1,489	0.29	100%	47	747	47	794
5	61–90	80%	965	0.19	100%	46	773	46	819
6	91–180	100%	1,924	0.38	100%	132	1,924	130	2,054
Total			**508,301**	**100**		**298**	**3,912**	**258**	**4,170**
7	Over 180	Write off	1,058	-	-	87	-	-	-

Source: FBA (2020a)

The portfolio's total value at the end of 2019 is BAM 508.3 million. In the total microloan portfolio at the sector level, 98.08% relate to microloans without defaults, while in the remaining 1.9% microloans there are defaults, of which defaults up to 30 days represent 0.86% or BAM 4, 4 million is overdue for more than 30 days (FBA, 2020). During of 2019, MCOs have written off BAM 1.1 million of principal and interest, which is 0.87% of the total portfolio in the sector.

From the information presented in Table 10, it is possible to draw the conclusion that the portfolio during this period is of a very high quality and that, throughout the entire period, it was significantly below the regulatory standards that were prescribed (PAR>30 days - below 5%, write off – below 3%). All this shows that MCOs are successfully managing credit risk, which is reflected in the low amount of the delinquent portfolio. This is supported by the fact that an average of 99.2% of microloans are not defaulted for the specified period.

Table 11: Key Indicators of Microcredit Portfolio Quality, 2015-2019

No.	Indicator	31.12.2015.	31.12.2016.	31.12.2017.	31.12.2018.	31.12.2019.
1.	PAR>30 days	1.06%	1.00%	0.89%	0.72%	0.86%
2.	Write off	1.16%	1.11%	1.00%	0.95%	0.87%

Source: FBA (2016), FBA (2017), FBA (2018), FBA (2019), FBA (2020a)

The improvement of active loan portfolio quality indicators was expressed by a decrease in the loan loss provision rate from 0.95%, which is what it amounted to as of December 31, 2015, to 0.89% in the end of 2019 (Table 5). Similarly, the portfolio at risk exceeding 30 days past due recorded an improvement, thus being down from 1.06%, to which it amounted at the end of the previous year, to 1.00%. Compared to the end of the previous year, as of December 31, 2017, the microcredit portfolio increased of 9% (BAM 33.3 million) and recorded an improvement in quality indicators of the active loan portfolio (FBA, 2018a). As of December 31, 2018 and compared to December 31, 2017, the gross microloan portfolio increased in the absolute amount of BAM 45.8 million or 11.1%. In the same period, the coverage of gross microloans with loan loss provisions decreased from 0.79%, as it was on December 31, 2017, to 0.64%, which is a decrease of 0.15 percentage points.

Through data analysis, it can be noticed that decreasing trend of coverage with loan loss provisions has continued since 2015. The risk portfolio indicator for more than 30 days in default (PAR>30 days) as of December 31, 2019 amounts to 0.86% at the level of the microcredit sector and it increased by 0.14 percentage points compared to December 31, 2018 (FBA, 2020). At the microcredit sector level, the rate of write-off of microloans as of December 31, 2019 amounted to 0.87, which is within FBA standards (below 3%).

As stated in Table 11, the risk portfolio indicator for more than 30 days in default (PAR>30 days) for the presented portfolio average amounts to 0.91% at the level of the microcredit sector. At the microcredit sector level, the rate of write-off of microloans for the same period amounted to an average of 0.87. Both indicators are within FBA standards, which is evidence of a high quality and healthy portfolio in the microcredit sector, PAR>30 days - below 5%, write off – below 3% (FBA, 2020).

5 MODIFICATIONS AND ADJUSTMENTS TO THE LEGAL AND INSTITUTIONAL FRAMEWORK OF MICROCREDIT ORGANISATIONS DURING THE COVID-19 PANDEMIC

5.1 The beginning of the Covid-19 pandemic

However, as is known, after the initial epidemic in China, the Covid-19 virus spread to the scale of the officially declared global pandemic in March 2020, with uncertain duration and dramatic consequences for human health and lives and the economy of the vast majority of countries, including B&H inevitably. All financial institutions in B&H have felt the impact on their operations (FBA, 2021). The worldwide Covid-19 pandemic has had a fundamental impact on the business operations of microcredit organizations in B&H. During the pandemic, MCOs ensured continuous work and accessibility to the population, constant contact, and exchange of information with the client, enabling precise insight into the impact of the coronavirus pandemic on the work and business of the clients.

The clients of the microfinance sector in B&H are strongly affected by the Covid-19 pandemic and felt the consequences of the crisis in regards to living and business opportunities the most. By orders of the competent authorities from April 2020, most of the so-called small tradesmen, who are the most frequent clients of MCO, were banned from working, as well as the operation of markets through which farmers market their products.

Yunus (2008) sets out the principle that, regardless of the disasters that may happen to a client, the debt must be repaid, even if the repayment should therefore be reduced to one cent per week. By forgiving the debt, the opposite effect would be achieved and the years of effort invested for the client to gradually gain self-confidence could be ruined. In the event of a disaster, one should never write off old debt, but turn it into a very long-term loan and try to collect it no matter how slow it goes.

5.2 Legal and regulatory framework during the corona pandemic

5.2.1 Reasons and objectives of making the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19

Keeping in mind the mandate given to the Banking Agency of the Federation of B&H by the Government of FB&H to continuously monitor and analyze all available information, and consider measures and activities to mitigate the negative economic consequences caused by the coronavirus in order to preserve the stability of the banking system, the FBA started preparing the decisions on temporary measures of MCOs to mitigate the negative economic consequences caused by the viral disease, Covid-19 as soon as possible. As well, as the recommendations of the Final Statement of the IMF mission in B&H for the year 2020 in terms of policies to strengthen financial stability in B&H, through the supervision of financial institutions and the state of loans and liquidity, with the aim of preventing non-fulfillment of credit obligations by solvent debtors who are currently exposed to economic stress due to newly emerging circumstances that they could not influence, affected the prompt response of the FBA as well as the immediate approach to drafting regulatory regulations.

The adoption of the Decision was primarily initiated by the expected economic effects of the global pandemic caused by the emergence and spread of the viral disease Covid-19, which are manifested or may be manifested as indirect and direct adverse effects on the economy, citizens and the banking system in Federation of B&H.

5.2.2 Subject and content of the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19

5.2.2.1 Subject of the Decision

The Banking Agency of the Federation of Bosnia and Herzegovina enacted Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19 (FBA, 2020). This Decision determines temporary measures aimed at recovering the economy from negative economic consequences caused by a pandemic of the virus disease Covid-19 and at preserving stability of the financial sector of the Federation of Bosnia and Herzegovina. The validity of decisions has been extended twice. These measures include the following (FBA, 2020):

- approving relief measures to customers of leasing companies and micro credit organizations being impacted by the negative effects of the Covid -19,
- special rules of credit risk management rules that leasing companies and micro credit organizations implement upon approval of special measures to customers.

According to this Decision, MCOs might approve to customers the relief measures to help those overcome difficulties they are experiencing and ensure easier regular settlement of obligations to MCOs over the following period.

5.2.2.2 Terms

Obligations, in sense of this Decision, are MCOs receivables from private individuals and legal entities related to the overall amount of due and non-due principal, accrued but unpaid interest on lease and micro credit agreements, fees and other accompanying costs related to lease and micro credit agreements (FBA, 2020). MCO customer shall mean, in sense of this Decision, every private individual or legal entity whose income, i.e. repayment sources have decreased to the extent that debt settlement to the MCO has been difficult, has been prevented or will be prevented as caused by the effects of the pandemic.

Special measures mean temporary measures of debt prolongation, restructuring and other relief measures leading to modification of exposures approved by MCOs to private individuals and legal entities for purpose of their recovery from the negative effects of the pandemic, (FBA, 2020) as well as for purpose of ensuring the creditworthiness and repayment capacity by MCO customers and ensuring sustainable operations of MCO customers and MCOs themselves. This also include performance of all other measures regarding credit risk management.

5.2.2.3 Special Measures

Special measures that MCOs can approve to customers are as follows (FBA, 2020):

- moratorium, i.e. postponement of loan repayments by up to 6 months,
- „grace“ period over debt repayment for obligations being repaid in annuities for a period of up to 12 months,
- final maturity prolongation for obligations being repaid in annuities,
- prolongation of obligations with one-off maturity, to include also revolving loans and transaction account overdrafts for a period up to 12 months, thus enabling customers to use the undrawn portion of the exposure as of the modification date during that period (applicable to leasing companies),
- approval of an additional exposure amount for bridging over their current liquidity problems (applicable to micro credit organizations),
- adjusting repayment schedule to reduced income or some other relevant parameter defined by a MCO, and
- other MCO measures aimed at relaxing debt settlement by customers and ensuring their sustainable operations.

Special measures might also encompass other modalities of adjusting method and dynamics of debt repayments, adequate relief measures and other forms of MCO support to customers within existing regulations with request from MCOs to implement all necessary activities of adequate credit risk management and to adjust to current and temporary business circumstances (FBA, 2020). An objective here is to create conditions for subsequent recovery and mitigation of negative economic consequences caused by the Pandemic to sustainability of customers’ business. Treatment of special measures might refer to measures approved by MCOs that rest on individual analysis of credit risk or portfolio risk and/or product risk, as well as sector structure of exposures, as this analysis further led to an assessment that approved measures will lead to regular debt settlement over the future period (FBA, 2020).

5.2.2.4 Modality of the implemented measures

For MCO customers, MCOs define appropriate modalities consisting of special measures assisting them to establish a sustainable model of operations and regularly settle obligations towards MCOs over the future period (FBA, 2020). This modality might include one special measure or combination of several such measures and is based on the customer’s request and individual credit analysis. It is based on this that MCOs have assessed that approved measures will help customers to regularly settle obligations over the future period. In case a modality includes a combination of special measures, MCOs might approve special measures for a period of up to 12 months (FBA, 2020).

In case of defining modalities for legal entities exposed with banks and non-deposit financial institutions, MCOs are to actively align activities with banks and other non-deposit financial institutions in order to determine a common modality for subsequent adjustment of actual debt repayment capacities (FBA, 2020). As a part of implementation of special measures, effective interest rate for modified exposures may not exceed the one defined in the existing agreement.

When arranging special measures, MCOs may not charge additional service fees, i.e. fees related to modified exposures. As for changes to initially arranged conditions for loans, MCOs obtain a written consent of other parties to the loan agreement. For the duration of a moratorium, MCOs shall not accrue legal default interest on the amount of due receivables.

5.2.2.5 Special Rules of Credit Risk Management during Covid-19

If MCO has approved a temporary moratorium over obligations prior to the effect date of this Decision, it might keep such customers in the classification category with accompanying provisioning percentage and with classification of receivables in the Central Loan Registry of the Central Bank of Bosnia and Herzegovina (CLR) they had as of February 29, 2020 and stop the days past due counter for the duration of the moratorium (FBA, 2020). After expiry of the moratorium and in case the customer has not been approved with some other special measure (modality), loss reserves shall be formed in line with the methodology prescribed by the Decision on Amount and Manner for Forming and Maintaining Reserves for the Coverage of Loan Losses of MCOs (FBA, 2007) starting from the moratorium expiry date and the days past due counter shall resume starting from condition as of February 29, 2020 (FBA, 2020).

If MCO has approved certain modality to the customer, loss reserves shall be formed in line with the methodology prescribed by Decision on Amount and Manner for Forming and Maintaining Reserves for the Coverage of Loan Losses of MCOs (FBA, 2007), by starting the days past due counter on the date of signing an annex to the agreement based on the change to the initially agreed repayment schedule.

5.2.2.6 Approval of Special Measures

MCOs might approve special measures based on written requests by customers, considering therein-negative economic consequences caused by the pandemic. Before approving any special measures prescribed in Decision (FBA, 2020), MCOs are required to inform customers of this possibility, as well as with all conditions and effects of such measures (in form of an offer). In turn, customers shall decide on the offer and deliver an acceptance of the offer, that is, if they in fact accept it. MCOs shall ensure full documentation for such implemented activities (FBA, 2020).

An important determinant of the Decision is that the MCO is left with the option of choosing one of the foreseen special measures to be taken and the modalities that may contain one or more special measures. In addition, the MCO can implement special measures at the request of a natural or legal person or initiate their use on its own initiative as part of the regular process of monitoring overdue claims (FBA, 2020).

5.2.2.7 Reporting

MCOs shall ensure monitoring of performance of special measures, keep special analytical records ensuring that all activities related to approval and arrangement of special measures from Decision and their effects can be reviewed and be available for MCO purposes and for purposes of Agency examinations (FBA, 2020). MCOs are to submit reports to the Agency on implementation of special measures using forms and deadlines prescribed by the Agency director.

MCOs shall pay special attention to monitoring changes in their own business models, liquidity and risk profiles and shall accordingly maintain an adequate level and structure of capital to cover all risks they are or might be exposed to under present conditions of their operations (FBA, 2020).

5.2.2.8 Mandatory Activities of MCOs

MCOs define in their internal documents the following (FBA, 2020):

- authorizations and responsibilities regarding the implementation of measures and activities, b) types of temporary measures and reliefs, as well as their implementation preconditions,
- method of documenting the approval of special measures and activities,
- communication with customers in sense of this Decision and other elements of relevance for implementation of this Decision,
- system of monitoring and reporting in the MCO and reporting to the Agency on activities and measures from this Decision and results of their implementation,
- special measures of the internal control system.

The majority of financial organizations adopted the decision to adjust and modify their risk management practices in order to account for the potential risk associated with exposure to Covid-19. There have been a number of changes, including the use of time- and risk-adjusted cash flow projections (such as discounted cash flows), a reduction in the maximum loan amounts, and adjustments in response to new legislation governing business activities (Dabrowska et. al., 2020). Despite extraordinary circumstances, the stability of the microcredit sector has not been called into question (Microfinance Centre, 2020).

6 MICROCREDIT SECTOR STRUCTURE IN THE FEDERATION OF BOSNIA AND HERZEGOVINA IN 2020 DURING COVID-19

Because of drastic lockdown measures, MCOs and the banking industry as a whole were forced to deal with a precipitous decrease in cash flows, which had a significant impact on small company owners. Before the Covid-19 crisis, both key loan portfolio quality standards were below FBA standards. Maintaining the prescribed levels of standards in the years 2020 and beyond was a major concern. Their movement above the legally mandated quantities could jeopardize the continued operation and survival of a great number of businesses.

In 2020, the authorities of many countries imposed strict restrictions on office attendance and the capacity of MCO employees to engage with consumers. Aside from government regulations, employees are increasingly reluctant to connect directly with clients and visit their business locations. People felt at ease using technology for professional communication and collaboration. Numerous efforts have been made by MCOs to boost customer acquisition through digital marketing and social media.

As with the majority of businesses, customer acquisition is merely the first step in microfinance. Credit analysis is a vital value-added activity that determines the quality of a loan decision. Clearly, consumers may now be questioned remotely as opposed to in person, and a skilled Loan Officer will know what information to obtain from the customer and how to verify its accuracy. In microfinance, however, compiling a client's financial accounts comes down to assessing the assumptions underlying the headline numbers. In addition to analytical skills, forensics knowledge is required for this type of work. It implies that a Loan Officer must visit the business's location and verify that the assumptions underlying the numbers are accurate.

There is now a greater credit risk because the future cash flows of consumers are less certain. In contrast, the current Covid-19 issue is multilayered, systemic, and worldwide to a degree that has never been in recent history. It has a significant impact on the portfolios of several institutions and nations, as well as on the business strategies of MCOs. The laws may have made the financial statements of numerous MCOs appear less alarming than they might have. The loan loss provisions and capital requirement restrictions have been significantly relaxed, making these MCOs appear to be sustainable businesses.

6.1 Status, Number and Business Network

In Table 12 is presented the aggregate data of 14 MCOs, which include basic information (number of MCOs, number of employees in the MCO sector) and key balance positions (assets, portfolio, capital, profit, placements).

Table 12: Aggregated information and key balance positions MCOs sector, at the end of 2019-2020

No.	Indicator	2019	2020	*Index*
		1	2	*3=(2/1)*100*
1	Number of MCO	14	14	*100.00*
2	Number of employees	1,522	1,573	*103.35*
2	Assets (BAM thousand)	631,298	658,055	*104.24*
3	Gross portfolio (BAM thousand)	508,301	540,890	*106.41*
4	Capital (BAM thousand)	294,316	311,574	*105.86*
5	Surplus (shortage) of income over expenses/net profit (loss) (BAM thousand)	19,489	11,246	*57.70*
6	Placements (BAM thousand)	482,678	454,124	*94.08*

Source: own work based on FBA (2020a), FBA (2021)

Despite the impact of the pandemic on the economic movement and the economy, the MCO sector is experiencing an increase in assets, loan portfolio, capital, and placements during the pandemic year, which confirms the sustainability of MCOs' operations even in periods of crisis. This claim is confirmed by the Central Bank of Bosnia and Herzegovina in the Financial Stability Report for 2020 (CBBIH, 2021). From the mentioned comparative data in the Table 12, it can be calculated that the assets grew by 4.23%, while the growth of the portfolio recorded a growth of 6.41%. It is important to state that the capital in 2020 compared to 2019 increased by 5.86%.

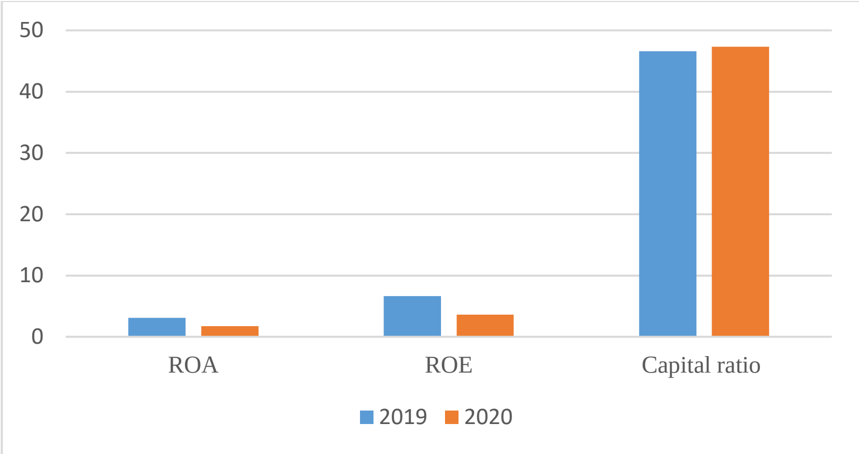
Table 13: Profitability indicators, 2019-2020

No.	Indicator	2019	2020
1	Return on assets (ROA) (in %)	3.09	1.71
2	Return on capital (ROE) (in %)	6.62	3.61
3	Capital ratio (ratio capital/assets) (in %)	46.62	47.35

Source: own work

As shown in Table 13 and illustrated in Figure 3, return on assets and return on capital decreased because of restrictions imposed by the pandemic, which led to a reduction in the surplus of income over expenditures (net profit). In contrast, the capital ratio experienced an increase of 0.73 index points.

Figure 3: Profitability indicators, 2019-2020



Source: own work

It is important to note that despite the restrictions and prohibitions imposed on a large number of service activities and businesses financed by the MCO sector, the placement of microcredits decreased by 5.91 percent in 2020, with no impact on the reduction of the credit portfolio, i.e. microcredits (FBA, 2021).

6.2 Financial indicators of performance during pandemic

6.2.1 Balance Sheet

The aggregate balance sheet data for 14 microcredit organizations operating on the territory of the Federation of Bosnia and Herzegovina from 2019 to 2020 is presented in Table 14. The financial data of operations and key quality parameters of the portfolio from 2020 will be compared with data from the year prior to the pandemic.

Table 14: Microcredit sector's balance sheet, at the end of 2019-2020 (BAM thousand)

No.	Indicator	2019	2020
	ASSETS		
1.	Cash	48,877	54,931
2.	Placements to banks	2,150	110
3.	Microloans	508,301	540,890
4.	Loan loss provisions	3,912	7,044
5.	Net microloans	504,389	533,846
6.	Tangible and intangible assets	33,253	31,304

(Table Continues)

Table 14: Microcredit sector's balance sheet, at the end of 2019-2020 (BAM thousand) (Continued)

7.	Long-term investments	33,061	33,061
8.	Other assets	9,826	4,813
9.	Reserves on other items in assets, apart from loans	258	10
9.	Reserves on other items in assets, apart from loans	258	10
	Total assets	**631,298**	**658,055**
	LIABILITIES		
10.	Liabilities on loans	301,743	315,423
11.	Other liabilities	35,239	31,058
12.	Capital	294,316	311,574
	Total liabilities	**631,298**	**658,055**
13.	Off-balance sheet records	102,236	226,342

Source: FBA (2020a), FBA (2021)

Total assets of the Federation of B&H microcredit sector as of December 31, 2020 amounted to BAM 658.1 million and are higher by BAM 28.4 million, i.e. 4.5% compared to December 31, 2019 (FBA, 2021). In 2020, there was an increase in total assets, despite the fact that the economy faced difficulties on the market due to unusual and unforeseen circumstances.

6.2.2 Microcredit Portfolio and Key Indicators of Microcredit Portfolio Quality in period of pandemic

The microloan portfolio presented in the gross amount in the balance sheet as of December 31, 2020 amounted to BAM 540.9 million, i.e. 82.2% of the total assets of the microcredit sector (FBA, 2021). That amount is presented with a reduction for the corresponding LLR in the total amount of BAM 7 million, and what is the net microloan portfolio amounts to BAM 533.9 million, i.e. 81.1% of the total assets of the Federation of B&H microcredit sector.

Compared to December 31, 2019, despite pandemic the gross microloan portfolio rose by BAM 29.9 million, i.e. by 5.8%, while the net microloan portfolio rose by the amount of BAM 27 million, i.e. 5.3% (FBA, 2021). The conclusion is that despite all of the unpredictable changes in economic trends caused by the pandemic, the MCO sector in Federation of B&H has experienced a continuous increase in microcredit and overall activity.

Faced with pandemic situation, a large majority of MCOs offered moratoriums to their clients at the very outset of the crisis. For the rest, at the end of moratorium periods, loans that are not repaid move into the MCOs' portfolio at risk. The main financial difficulty encountered by MCOs is the increase in the portfolio at risk (PAR), inflated by client defaults, exits from moratorium periods and potentially by portfolio reduction. Net microloans review for the period 2019 - 2020 are shown in Table 15:

Table 15: Net micro loans, 2019-2020 (BAM thousand)

No.	Indicator	2019	2020	*index*
		1	2	*3=(2/1)*100*
1.	Microloans (gross)	508,301	540,890	*106.41*
2.	Loan loss provisions	3,912	7,044	*180.06*
	Net microloans (1.-2.)	**504,389**	**533,846**	***105.84***
3	Ratio Loan loss provision/Microloans (gross)	0.77%	1.30%	

Source: FBA (2020a), FBA (2021)

In 2020, the pandemic period with unexpected and unplanned economic trends, the only thing that could be expected was an increase in LLR and consequently an increase in costs and a decrease in profits. All activities are aimed at trying to overcome the newly created situation with the aim of mitigating the negative effects.

Tables 16 and 17, provide an overview of receivables with related provisions by groups according to the number of days in default, as well as data on outstanding overdue receivables over 180 days (being removed from the balance sheet –write off), for 2019-2020 (FBA, 2020, 2021, 2022). Despite the fact that the tabular review of Loan loss provision for 2019 was previously mentioned, it is listed here for the chronological and ongoing monitoring of Loan loss provision for 2019-2020, as well as their analysis and comparison. The portfolio at risk over 30 days in 2019 was 0.86 percent while the write-off was 0.87 percent so it can be concluded that the portfolio in 2019 was marked as stable and high-quality.

Table 16: LLP - Loan Loss Provisions, December 31, 2019 (BAM thousand)

No.	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due: Rate of provisions	Interest due: Amount of interest	Provisions: By microloans	Provisions: By past-due interest	Total provisions
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8**
1.	0	0%	498,565	98.08	0%	5	0	0	0
2.	1–15	2%	2,713	0.53	2%	35	56	0	56
3.	16–30	15%	2,645	0.52	100%	33	412	35	447
4.	31–60	50%	1,489	0.29	100%	47	747	47	794
5.	61–90	80%	965	0.19	100%	46	773	46	819
6.	91–180	100%	1,924	0.38	100%	132	1,924	130	2,054
Total			**508,301**	**100**		**298**	**3,912**	**258**	**4,170**
7.	Over 180	Write off	1,058	-	-	87	-	-	-

Source: FBA (2020a)

The level of LLR in 2020 increased by BAM 3.1 million, i.e. 68.9% due to worsened portfolio quality caused by difficult business conditions during the pandemic (FBA, 2021). The LLR to total gross microloan portfolio as of December 31, 2020 amounted to 1.3%, which, compared to the same ratio as of December 31, 2019, when it amounted to 0.87%, represents an increase by 0.5 percentage points.

Table 17: LLP - Loan Loss Provisions, December 31, 2020 (BAM thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions			Total provisions
					Rate of provisions	Amount of interest	By microloans	By past-due interest	By micro loans	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10**	**11=10+9+8**
1	0	0%	522,654	96.59	0%	257	0	0	0	0
2	1–15	2%	5,297	0.99	2%	57	106	1	1	108
3	16–30	15%	5,401	1.01	100%	55	810	55	34	899
4	31–60	50%	3,077	0.57	100%	76	1,540	76	16	1,632
5	61–90	80%	1,722	0.32	100%	67	1,378	67	2	1,447
6	91–180	100%	2,739	0.51	100%	198	2,739	198	21	2,958
Total			**540,890**	**100**	**540,890**	**710**	**6,573**	**397**	**74**	**7,044**
7	Over 180	Write off	1,428	-	-	186	-	-		-

Source: FBA (2021)

In the total microloan portfolio at the sector level, 96.6% relate to microloans without defaults, while in the remaining 3.4% of microloans there are defaults, of which defaults up to 30 days represent 2% of microloans, while 1.4% are defaults of 31 to 180 days (FBA, 2021).

In accordance with the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from the negative economic effects of Covid-19, MCO ensured the monitoring of the execution of special measures and maintained special analytical records to ensure that all activities related to the approval and regulation of special measures from the Decision were carried out. Furthermore, their impact can be observed and accessed to support the MCO's findings and the Agency's assessment requirements.

During the 2020, 23,809 clients submitted a request for one of the special measures described in the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from the negative economic consequences caused by Covid-19 (FBA, 2021). This corresponds to BAM 135 million of the loan portfolio, or 25.83 percent of the average loan portfolio during the course of 2020. Microcredit institutions evaluated and approved special measures for 22,325 clients, representing a portfolio of BAM 106 million, or 20.24 percent of the average loan portfolio. During the course of the year, 13,574 clients resolved their issues by writing off or paying off their loans.

According to FBA's reports, as of December 31, 2020, an amount of BAM 54,3 million or 10.1% of total loans was captured by some of active special measures based on the Decision on temporary measures of leasing companies and micro credit organizations to ensure recovery from negative economic consequences caused by Covid-19. Total amount of the corporate loan portfolio subjected to special measures equals BAM 5 million or 32.2% of the corporate loan portfolio, while retail loan portfolio covered by special measures participate in the retail loan portfolio with an amount of BAM 49,3 million or 9.5% of the corporate loan portfolio.

The following data was obtained in response to a request sent to the Banking Agency of the Federation of Bosnia and Herzegovina for information on the number of clients who requested one of the special measures during the pandemic, the number of approved measures, and the size of the risk portfolio. The data are presented in detail in Table 26.

MCOs in Federation of Bosna and Herzegovina in pandemic period have remained stable and their portfolios showed excellent performance (MFC, 2020). In case the FBA did not pass the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from the negative economic consequences caused by Covid-19, at least 50 percent of the total portfolio amounting to BAM 106 million (for which one of the measures was approved) would have influenced the reduction of capital through the financial result of that year via write-offs and provisions. Considering that the total surplus of income over expenditures for the year 2020 was BAM 11 million the measures had multiple effects. The FBA's activities protected and ensured that the sector's growth could continue unaffected.

Table 18: Key Indicators of Microcredit Portfolio Quality, 2019-2020

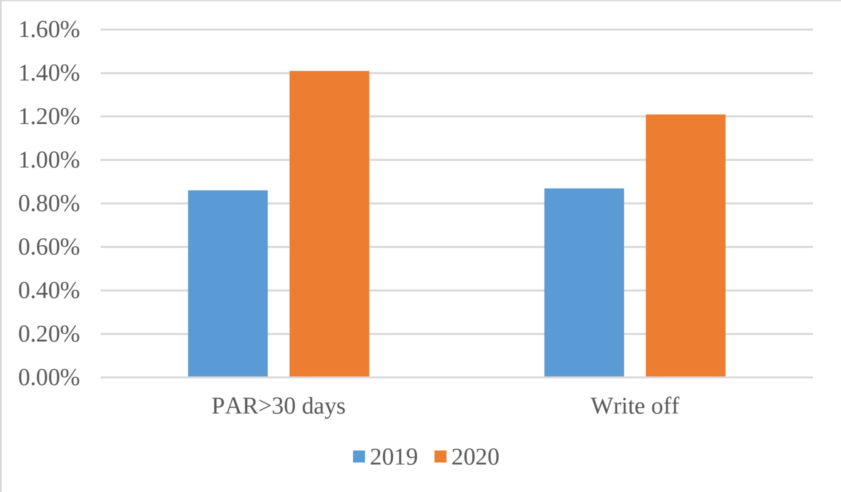
No.	Indicator	2019	2020
1.	PAR>30 days	0.86%	1.41%
2.	Write off	0.87%	1.21%

Source: FBA (2020a), FBA (2021)

It is important to note that the key indicators of the portfolio, as it shown in Table 18, in the period of 2020 when the effects of the pandemic were presented, deteriorated compared to 2019. The portfolio at risk over 30 days (PAR>30 days) as of December 31, 2020 amounts to 1.41% at the level the microcredit sector and it increased by 0.55 percentage points compared to December 31, 2019, as largely caused by the pandemic (FBA, 2021).

Moreover, the write-off increased by 0.34 index points or 28.10 percent as illustrated in Figure 4. Despite the fact that the indicators have increased, they remain far below the prescribed levels (PAR>30 days - below 5%, write off – below 3%).

Figure 4: Key Indicators of Microcredit Portfolio Quality, 2019-2020



Source: FBA (2020a), FBA (2021)

The Banking agency of Federation of Bosnia and Herzegovina allowed the rescheduling of loans under the pandemic relief programs and allowed to include these rescheduled loans as part of the regular portfolio, effectively treating them as performing loans. MCOs had a dilemma whether PAR 30 although accurate and correctly calculated in accordance with regulatory requirements, might not reflect the true quality of their portfolios.

The true quality of the portfolio is only known after the expiration of the moratorium, which in most cases was until the end of 2021 when the regulatory decision to mitigate the consequences of the pandemic was valid. For this reason, the overview below also provides a comparative overview for 2021 and 2022.

The movement of the previously presented key balance positions completely justifies adopting a modified credit risk management decision to mitigate the pandemic's negative effects and preserve the microcredit sector.

7 MICROCREDIT SECTOR STRUCTURE IN THE FEDERATION OF BOSNIA AND HERZEGOVINA AND AFTER PANDEMIC, 2020 - 2022

7.1 Status, Number and Business Network

During 2021, one MCO ceased working. Nonetheless, its data are not material and do not affect the continuation of the evaluation and compilation of indicators. It is feasible to deduce that the microcredit sector remains stable during the period 2020-2022, as evidenced by the consistent development of the separately presented positions of the income statement and balance sheet in Table 19. The expansion of the loan portfolio is accompanied by the ongoing development of assets, capital, and outcomes.

Table 19: Aggregated information and key balance positions MCOs sector, at the end of 2020-2022

No.	Indicator	2020	2021	*Index*	2022	*Index*
		1	2	*3=(2/1)*100*	4	*5=(4/2)*100*
1	Number of MCO	14	13	*92.86*	13	*100.00*
2	Number of employees	1,573	1,577	*100.25*	1,591	*100.89*
2	Assets (BAM thousand)	658,055	693,478	*105.38*	728,910	*105.11*
3	Gross portfolio (BAM thousand)	540,890	563,365	*104.16*	605,622	*107.50*
4	Capital (BAM thousand)	311,574	333,840	*107.15*	353,121	*105.78*
5	Surplus (shortage) of income over expenses/net profit (loss) (BAM thousand)	11,246	14,181	*126.10*	13,268	*93.56*
6	Placements (BAM thousand)	454,124	497,860	*109.63*	552,891	*111.05*

Source: FBA (2021), FBA (2022), FBA (2023)

Based on the data in Table 19, it can be calculated and shown that the balance positions of assets, microcredit portfolio and capital are growing in the observed period. It can be deduced that there were no substantial fluctuations in the balance sheet positions during the post-pandemic period, as will be elaborated upon subsequently.

Table 20: Profitability indicators, 2020-2022

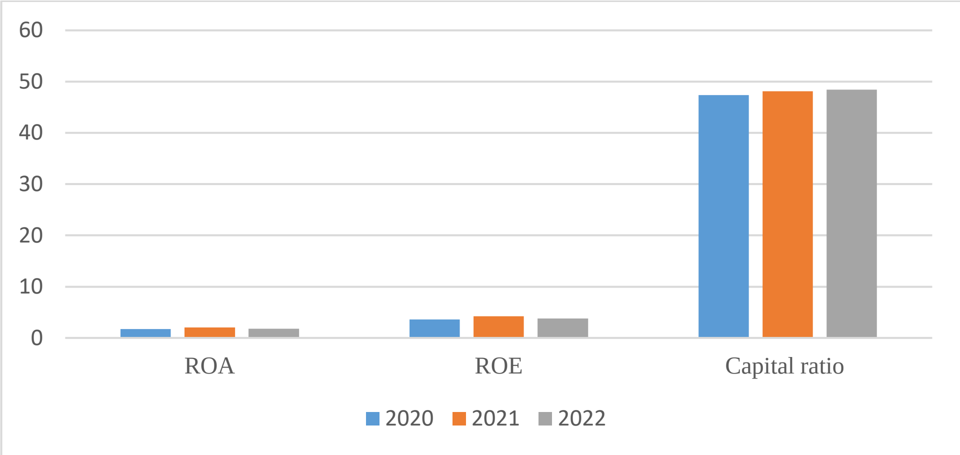
No.	Indicator	2020	2021	2022
1	Return on assets (ROA) (in %)	1.71	2.04	1.82
2	Return on capital (ROE) (in %)	3.61	4.25	3.76
3	Capital ratio (ratio capital/assets) (in %)	47.35	48.14	48.45

Source: own work

When examining and comparing profitability indicators, Table 20 reveals that these indicators experience growth as a result of the measures implemented by the Banking Agency of the Federation of Bosnia and Herzegovina.

ROE experienced a greater increase of 0.64 index points compared to ROA's 0.33 index point increase as illustrated in Figure 5. Additionally, the capital ratio exhibited a 0.79 index point increase in 2021 when compared to 2020. However, this indicator records a decline in 2022, which was caused by world economic and political events.

Figure 5: Profitability indicators, 2020-2022



Source: own work

As a result of comparing and analysing the key indicators of portfolio quality, it is possible to conclude that the pandemic did not have a significant impact on the increase of these indicators in the Federation of Bosnia and Herzegovina during the pandemic period, as they remained within the prescribed ranges. As a result of the decisions made by the regulator to mitigate the negative economic consequences caused by the coronavirus, portfolio quality indicators in the MCO sector maintain similar trends in 2021 and 2022, while the absolute amounts of assets, portfolios, and capital increase.

The operations of microcredit sector in 2021 were marked by asset growth, growth of gross loans, capital increase, accompanied by the decreased value of delayed loans, and profitability growth (CBBIH, 2022). The recovery of profitability of MCO sector was mainly the result of the growth of the total recorded income with lower costs of regulatory provisions for loan losses, which had a positive impact on profitability growth.

7.2 Balance sheet

Comparing the balance sheet positions for the post-pandemic period, it is concluded that the growth of microloans is evident, which averages 5.48 percent while maintaining approximately the same level of provisions for loan losses. It is essential to note that capital increased by an average of 6.06 percent due to effective credit risk management.

The amount of the written-off portfolio is in average decline, which is the result of the collection of written off receivables and a smaller amount of newly written off. As previously demonstrated, the microcredit sector continues its upward trend in terms of assets, portfolios, capital, and placements even after the Covid-19 pandemic as shown in Table 21:

Table 21: Microcredit sector's balance sheet, at the end of 2020-2022 (BAM thousand)

No.	Indicator	2020	2021	2022
	ASSETS			
1.	Cash	54,931	64,925	54,405
2.	Placements to banks	110	1,660	182
3.	Microloans	540,890	563,365	605,622
4.	Loan loss provisions	7,044	6,519	7,167
5.	Net microloans	533,846	556,846	598,455
6.	Tangible and intangible assets	31,304	30,728	29,732
7.	Long-term investments	33,061	33,888	34,388
8.	Other assets	4,813	5,441	11,748
9.	Reserves on other items in assets, apart from loans	10	10	0
Total assets		**658,055**	**693,478**	**728,910**
LIABILITIES				
10.	Liabilities on loans	315,423	325,949	338,265
11.	Other liabilities	31,058	33,689	37,524
12.	Capital	311,574	333,840	353,121
Total liabilities		**658,055**	**693,478**	**728,910**
13.	Off-balance sheet records	226,342	210,918	217,787

Source: FBA (2021), FBA (2022), FBA (2023)

The growth of microloans, or the loan portfolio, is accompanied by roughly the same amount of loan loss provision, which is evidence of a high-quality loan portfolio. Despite the economic and political climate of a country, the microcredit industry remains profitable.

7.3 Microcredit Portfolio and Key Indicators of Microcredit Portfolio Quality after pandemic

Improved macroeconomic circumstances had a positive effect on the credit portfolio quality in microcredit sector, and, in addition, the satisfactory quality of credit portfolio in microcredit sector was preserved due to the measures of regulators to mitigate negative economic consequences of the pandemic, which were in effect throughout 2021 (CBBIH, 2022), which is presented in Table 22. Regardless of the effects of the economic crisis that caused the pandemic, the microcredit portfolio continued to grow and its average growth was 5.83 percent in the period 2020-2022.

Table 22: Net micro loans, 2020-2022 (BAM thousand)

No.		2020	2021	*Index*	2022	*Index*
		2	2	*3=(2/1)*100*	2	*5=(4/2)*100*
1.	Microloans (gross)	540,890	563,365	*104.16*	605,622	*107.50*
2.	Loan loss provisions	7,044	6,519	*92.55*	7,167	*109.94*
	Net microloans (1.-2.)	**533,846**	**556,846**	***104.31***	**598,455**	***107.47***
3	Ratio Loan loss provision/Microloans (gross)	1.30%	1.16%		1.18%	

Source: own work based on FBA (2021), FBA (2022), FBA (2023)

Below is an overview of trends in portfolio quality indicators for the period 2020-2022. In the period after 2020, portfolio growth is present in the microcredit sector and its quality is maintained at approximately the same level as in previous years.

Table 23: LLP - Loan Loss Provisions, December 31, 2021 (BAM, thousand)

					Interest due		Provisions			
	Days in default	**Rate of provisions**	**Amount of loans**	**Share (%)**	**Rate of provisions**	**Amount of interest**	**By microloans**	**By past -due interest**	**By microloans**	**Total provisions**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10**	**11=10+9+8**
1	0	0%	543,263	97.36	0%	34	0	0	0	0
2	1–15	2%	3,753	0.67	2%	86	75	2	0	77
3	16–30	15%	3,898	0.70	100%	57	585	57	12	654
4	31–60	50%	2,764	0.50	100%	85	1,383	85	1	1,469
5	61–90	80%	1,508	0.27	100%	67	1,206	67	1	1,274
6	91–180	100%	2,817	0.50	100%	227	2,817	227	1	3,045
Total			**558,003**	**100**		**556**	**6,066**	**438**	**15**	**6,519**
7	Over 180	Write off	1,920	-	-	497	-	-		-

Source: FBA (2022)

As shown in Table 23, at the end of 2021, loans delayed in repayment for more than one day accounted for 0.67% of the total credit portfolio, their share being lower compared to the previous year. The share of loans delayed in repayment for more than 30 days also decreased, amounting to 1.27% at the sector level. Provisions for loan losses at the sector level amounted to BAM 6.5 million.

Table 24: LLP - Loan Loss Provisions, December 31, 2022 (BAM, thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions			Total provisions
					Rate of provisions	Amount of interest	By microloans	By past - due interest	By microloans	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10**	**11=10+9+8**
1	0	0%	586,918	97.46	0%	313	0	0	171	171
2	1–15	2%	4,184	0.69	2%	124	84	2	26	112
3	16–30	15%	3,679	0.61	100%	87	552	87	56	695
4	31–60	50%	2,714	0.45	100%	116	1,357	116	61	1,534
5	61–90	80%	1,703	0.28	100%	71	1,362	71	39	1,472
6	91–180	100%	2,995	0.50	100%	187	2,995	187	1	3,183
Total			**602,193**	**100**		**898**	**6,350**	**463**	**354**	**7,167**
7	over 180	Write off	1,983	-	-	154	-	-		-

Source: FBA (2023)

According to the tables 23 and 24, the risk portfolio over 30 days increased by 0.55 percentage points in 2020 compared to December 31, 2019, while write-offs increased by 0.34 percentage points during the same time frame and had no significant impact on the portfolio's quality. Comparing the parameters of both standards in 2021 and 2022 to those of 2020 indicates a decline in both standards, showing a slight improvement in the portfolio's quality post-pandemic period as illustrated in Figure 6.

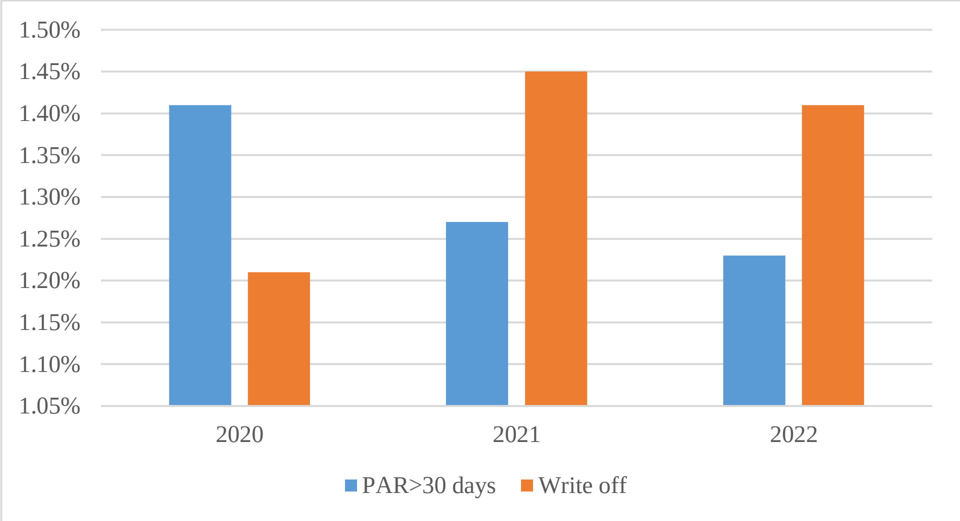
Table 25: Key Indicators of Microcredit Portfolio Quality, 2020-2022

No.	Indicator	2020	2021	2022
1.	PAR>30 days	1.41%	1.27%	1.23%
2.	Write off	1.21%	1.45%	1.41%

Source: FBA (2021), FBA (2022), FBA (2023)

Table 18 and Table 25 show the trends of portfolio parameters in the years following the pandemic. Table 25 indicates that the portfolio is at risk for more than 30 days in recovery and has a tendency to decline, indicating that the portfolio's quality is still high. A marginal increase in write-offs has no significant negative effect on total assets, portfolio, or capital. During the period of observation, the listed balance sheet items grew significantly.

Figure 6: Key Indicators of Microcredit Portfolio Quality, 2020-2022



Source: FBA (2021), FBA (2022), FBA (2023)

The movement of portfolio quality indicators, portfolio risk over 30 days, and write-offs, as well as their maintenance at a level well below regulatory requirements even after the pandemic, are the consequence of the regulatory body's current activities. The implementation of crisis decisions by the Banking Agency of the Federation of Bosnia and Herzegovina had a positive impact on the continuation of operations and success of the microcredit sector in the Federation of Bosnia and Herzegovina.

8 EMPIRICAL ANALYSIS

8.1 Methodology

The purpose of the master's thesis was to present the reasons and impact of regulators' adjustments of rules of management of loan-loss provisions during the pandemic and their impact on the performances of microcredit organizations in the Federation of Bosnia and Herzegovina using methodological approach and application of descriptive, normative, comparative, and content analysis methods. In addition, the objective of the thesis is to demonstrate, via simulation, the impact that the management of loan loss provisions would have on the income statement, balance sheet, key portfolio indicators, and profitability in the absence of any modifications. The thesis provides information on fourteen microcredit organizations operating on the territory of the Federation of Bosnia and Herzegovina in the period 2015-2022 and to which the legal and sub-legal acts issued by the Banking Agency of the Federation of Bosnia and Herzegovina make reference.

The master's thesis began with a comprehensive presentation of the origin and beginning of microcredit organizations, as well as the initiative to launch a microcredit program in Bosnia and Herzegovina. The descriptive method was used to describe concepts and phenomena as well as their connections and relationships while using normative analysis, a summary of the main legal and regulatory framework of microcredit organizations was provided, with a focus on the regulatory framework for credit risk management in microcredit organizations in the Federation of Bosnia and Herzegovina.

More precisely, in order to prove and answer the research questions, the method of forming provisions for credit losses is explained in detail, which depends solely and only on one parameter, which is the number of days of delay in repayment. The Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations in the Federation of Bosnia and Herzegovina was adopted in 2007 and has not been changed to this day, except during the pandemic, when the days past due counter was stopped on a certain day.

The data included in the regulator's reports for the period 2015-2022 is used to attempt, via analytical and comparative methods, to track the movements of trending key portfolio indicators, identify similarities between them, and emphasize similarities or differences. Special attention is paid to the movements and trends of the credit portfolio and key parameters that show its quality, portfolio at risk over 30 days, and write off ratio. Individual analyzes of the movement of key portfolio quality parameters and their influence on the key performance of the microcredit industry as a whole were conducted.

In order to justify and confirm the master's thesis, a simulation will be carried out under the assumption that the remaining portfolio, which is according to the official data of the Banking Agency of the Federation of Bosnia and Herzegovina still under some of the special measures on December 31, 2020, and it has not been collected from clients by the end of 2020. For simulation purposes, that amount of the portfolio will be considered to be in default for more than 180 days. In accordance with the rules from the Decision from 2007, a portfolio that is in default for more than 180 days will be written off and charged the costs of provisions for loans and other losses.

With the aim to determine its impact on the indicators, the simulation will first require the write-off of that portfolio (delay in repayment over 180 days) and its display in the Loan loss provisions simulation table. Furthermore, the effects of the write-off will be shown in the income statement with effects on the financial result. After that, the financial result from the balance sheet will be included in the simulation of Income statement items and the impact on the amount of capital and portfolio will be presented. In addition, a simulation of key portfolio quality indicators will be presented and described. The goal of this part of the master's thesis is to assess the importance and role of making a modified and adapted decision on credit risk management.

RQ1: What are the regulatory decisions and regulations to manage the credit risk of microcredit organizations in a pre-pandemic economic environment?

This research question was posed with the intention of introducing and familiarizing with risk management in microcredit organizations. It is specific that provisions for credit losses are determined based on the number of days of delay, and no other criteria are applied. Depending on the number of days the debt is overdue, MCOs are obliged to form reservations according to the Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations with the same content as the percentage and the manner for forming and maintaining reserves (FBA, 2007). The Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations stipulates the percentage and the manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations. This decision is crucial for the microcredit industry's credit risk management. Aside from this, there is no other legal framework, and subjective evaluation is not factored into the calculation, as the percentage of the reservation is exclusively dependent on the number of days overdue. The established credit loss reserve management model does not allow for the flexibility of risk management, because it depends only on one criterion, the number of days of delay, on which the provisioning rate depends. This is precisely the lack of such an organized way of management, that subjective evaluations and the implementation of IFRS 9 are not feasible.

RQ2: What do the regulatory adjustments and regulations bring to MCO to control the credit risk and ensure recovery from negative economic consequences caused by Covid-19?

Continuously monitoring and analyzing all available information, the Banking Agency of the Federation of Bosnia and Herzegovina considered measures and activities to mitigate the coronavirus's negative economic effects. The purpose of these activities was to preserve the stability of the banking system and strengthen financial stability in Bosnia and Herzegovina through the supervision of financial institutions and the state of loans and liquidity, as well as flexibility in the regulation, so as to prevent the non-fulfillment of credit obligations by solvent debtors who are currently exposed to economic stress as a result of uncontrollable new circumstances. In light of these factors, the FBA passed the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19. The decision addressed the manner of authorizing relief measures for customers of microcredit organizations impacted by the negative effects of Covid-19, as well as the special rules of credit risk management that microcredit organizations implement upon approval of special measures for customers.

According to this Decision, key adjustments in risk management are stopping the days past due counter for the duration of the temporary measures. In case of approved temporary measures, MCO keeps such customers in the classification category with accompanying provisioning percentage and with the classification of receivables in the Central Loan Registry of the Central Bank of Bosnia and Herzegovina (CLR) they had as of February 29, 2020 and stop the days past due counter for the duration of the temporary measures. As a result, there was no increase in the cost of provisions for credit losses, as the number of days of delay was suspended.

After the expiry of the temporary measures and in case the customer has not been approved with some other special measure (modality), loss reserves shall be formed in line with the methodology prescribed by the Decision on Amount and Manner for Forming and Maintaining Reserves for the Coverage of Loan Losses of MCOs (FBA, 2007) starting from the temporary measures expiry date and the days past due counter shall resume starting from condition as of February 29, 2020.

RQ3: What are the effects and impacts of the application of the risk management rules in the pandemic on the key indicators of microcredit portfolio quality: portfolio at risk over 30 days, write-off ratio, and provision for loan losses?

The Banking Agency of the Federation of Bosnia and Herzegovina adopted the necessary legal regulations for credit risk management with promptness and initiative. The outcome of its activities is the preservation of the loan portfolio's quality, which has a direct impact on provisions for loan losses. This had an additional effect on the stability of the microcredit sector through the growth of all balance sheet positions, especially the portfolio, capital, profitability, and the maintenance of key credit parameters below regulatory requirements.

The methodological approach and presented data enabled the conclusion that the Banking Agency of the Federation of Bosnia and Herzegovina played a crucial role in maintaining the stability of the entire financial sector and thus the microcredit sector during the pandemic. By adopting adjusted credit risk management and stopping the counter of days of delay, it achieved to manage the costs for credit losses. This action resulted in the maintenance of regulatory standards within the prescribed framework, which was the foundation for the efficient continuation performance of credit operations. Thanks to the FBA's quick reaction and the adoption of the necessary legal regulations for credit risk management, MCOs in the Federation of Bosnia and Herzegovina during the pandemic period have remained stable and their portfolios showed excellent performance (MFC, 2020).

8.2 Results

Immediately following the official declaration of the pandemic, the Banking Agency of the Federation of Bosnia and Herzegovina passed the Decision on Temporary Measures of Leasing Companies and Microcredit Organizations to Ensure Recovery from Negative Economic Consequences Caused by Covid-19, outlining clear rules for credit risk management and the possibility of approving one of the special measures. Stopping the days past due counter, the FBA permitted MCOs to include loans under special measures as part of their regular portfolio, treating them as performing loans.

During the pandemic, MCOs were required to report monthly on the number of clients and the number of portfolios subject to special measures, per this Decision. The monthly reports were the basis of analysis and special monitoring for MCOs on changes in their business models, liquidity, and risk profiles and accordingly maintaining an adequate level and structure of capital to cover all risks they are or might be exposed to.

The potential negative repercussions for the MCO sector will be analyzed in this master's thesis through the use of a simulation of the effect of writing off the remainder of the portfolio, which is under one of the special measures. The scenario would have occurred if the Banking Agency of the Federation of Bosnia and Herzegovina had failed to implement the necessary legal regulations associated with credit risk management. Following up on this chapter, comparative data regarding the actual write-off figures, the balance sheet's key positions, and the balance sheet's performance during the 2020 pandemic will be presented and analyzed alongside the numbers derived from the simulation related to the remainder of the portfolio that is under one of the special measures and is over 180 days in default. Exactly the information that MCOs were required to submit to the Banking Agency of the Federation of Bosnia and Herzegovina will be used to simulate the effects and impact on the balance sheet positions and key indicators of the quality portfolio. Therefore, I formally requested FBA's permission to use these aggregate data to develop a thesis presented in Table 26.

Table 26: Special measures, 2020 (BAM thousand)

	The number of debtors who submitted a request	Gross amount of the loan for which the application was submitted (000 BAM)	The total number of debtors for whom the request was approved	Active special measures		Expired special measures	
				Number of debtors	Gross loan amount (000 BAM)	Number of debtors	Gross loan amount (000 BAM)
1. Corporate	474	8,594	456	302	4,991	154	2,709
2. Retail	23,567	127,789	22,097	8,457	49,311	13,626	49,790
3. Total (1. + 2.)	**23,809**	**135,892**	**22,325**	**8,751**	**54,272**	**13,574**	**52,200**

Source: FBA (2021)

During 2020, 23,809 clients submitted a request for one of the special measures which is 14.47 percent of the total clients (total amount of active clients 164,591). This corresponds to BAM 135 million of the loan portfolio, or 25.83 percent of the average loan portfolio during the course of 2020. Microcredit organizations evaluated and approved special measures for 22,325 clients (FBA, 2021), representing a portfolio of BAM 106 million, or 20.24 percent of the average loan portfolio. During the course of the year, 13,574 clients resolved their issues by writing off or paying off their loans in amount of BAM 52,2 million.

According to FBA's reports, as of December 31, 2020 is recorded amount of BAM 54,3 million or 10.1% of total loans or 8,751 clients captured by some active special measures based on the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19. For the simulation and determination of the effects, it will be assumed that this amount of gross loans, BAM 54,272 million, will be considered outstanding overdue loans (default over 180 days).

According to the Decree on percentage and manner for forming and maintaining reserves for the coverage of loan losses of microcredit organizations (FBA, 2007), in the case of this assumption, it will require a 100% write off of the total amount of gross loans and increasing Costs of provisions for loan losses in the Income statements. The result of the application rules of this Decree would be an increase in expenses for BAM 54,272 million, which would affect the reduction of the financial result for that year and, consequently, the reduction of capital. In Information on the banking system entities of the Federation of Bosnia and Herzegovina as of December 31, 2020, FBA provides an overview of receivables with related provisions by groups according to the number of days in default. It can be concluded that in the total microloan portfolio at the sector level, 96.6% relate to microloans without defaults, while in the remaining 3.4% of microloans, there are defaults, of which defaults up to 30 days represent 2% of microloans, while 1.4% are defaults of 31 to 180 days.

These portfolio quality results were achieved thanks to the application of the Decision on temporary measures of leasing companies and microcredit organizations to ensure recovery from negative economic consequences caused by Covid-19. As it was previously anticipated that as of December 31, 2020, the amount of BAM 54,272 million of the gross loan under special measures would be delayed by more than 180 days, it is necessary to adjust the data in Table 26 to reflect the simulation results.

However, in the case of simulation, the aforementioned data changes drastically. The amount of the written-off portfolio increases significantly, and instead of BAM 1,428 million, it has increased to BAM 54,272 million, which means that there is a significant decrease in the quality portfolio and an increase in the amount written off, which is shown in Table 27.

Table 27: Simulation LLP - Loan Loss Provisions, December 31, 2020 (BAM thousand)

	Days in default	Rate of provisions	Amount of loans	Share (%)	Interest due		Provisions		Total provisions
					Rate of provisions	Amount of interest	By microloans	By past -due interest	
1	**2**	**3**	**4**	**5**	**6**	**7**	**8=4x3**	**9=7x6**	**10=9+8+7**
1	0	0%	522,654	96.59	0%	257	0	0	0
2	1–15	2%	5,297	0.99	2%	57	106	1	108
3	16–30	15%	5,401	1.01	100%	55	810	55	899
4	31–60	50%	3,077	0.57	100%	76	1,540	76	1,632
5	61–90	80%	1,722	0.32	100%	67	1,378	67	1,447
6	91–180	100%	2,739	0.51	100%	198	2,739	198	2,958
Total			**540,890**	**100**		**710**	**6,573**	**397**	**7,044**
7	**=ver 180**	**Write off**	**1,428**	-	-	186	-	-	-
8	Simulatio n LLP	**Write off**	**54,272**	-	-	-	-	-	**55,700**

Source: own work

Based on the Information on the banking system entities of the Federation of Bosnia and Herzegovina as of December 31, 2020 (FBA, 2021), the financial result of all MCOs in the territory of Federation of B&H amounted to BAM 11.246 million which is illustrated in Table 28.

Table 28: Simulation of Income Statement, 2020 (BAM thousand)

No.	Indicator	2020	Effects of simulation of Income Statement	Simulated data 2020
1.	Income			
1.1.	Interest income and similar income	102,953		102,953
1.2.	Operating income	7,264		7,264
1.3.	Other operating income	1,147		1,147
2.	**Total income (1.1.+1.2.+1.3.)**	**111,364**		**111,364**
3.	Expenses			
3.1.	Interest expenses and similar expenses	13,691		13,691
3.2.	Operating expenses	73,697		73,697
3.3.	Other operating expenses	972		972
3.4.	Costs of provisions for loan and other losses	10,109	54,272	64,381
4.	**Total expenses (3.1.+3.2.+3.3.+3.4)**	**98,469**	**54,272**	**152,741**
5.	Profit/loss and excess/shortfall of income over expenses before taxation	12,895		-41,377
6.	**Income tax and excess income over expenses**	**1649**		**0**
7.	**Net profit/loss and net excess/shortfall of income over expenses**	**11,246**		**-41,377**

Source: FBA (2021) and own work

By increasing the costs for credit loan losses as shown in Table 27, the positive financial result achieved in 2020 would be reduced by the simulation effect that is illustrated in Table 28 and then MCO would realize a negative operating result of BAM 41,377 million.

The result, achieved in this way, would undermine the stability of the microcredit sector and threaten the continuation of work in the coming period. In that case, there would be a deterioration of business indicators, which are calculated using the amount of capital and financial results: operational efficacy of business operations, the return on assets adjusted for inflation, the market price of capital and donations (AROA) and the indicator of operational sustainability (which is used as a general standard and which represents a ratio of total income from regular operations (minus written off receivables and other operating income) and total expenses.

Table 29: Simulation of Balance Sheet, at the end of 2020 (BAM thousand)

No.	Indicator	2020	Effects of simulation of Balance Sheet	Simulated data 2020
	ASSETS			
1.	Cash	54,931		54,931
2.	Placements to banks	110		110
3.	Microloans	540,890		540,890
4.	Loan loss provisions	7,044	-54,272	61,316
5.	Net microloans	533,846	-54,272	479,574
6.	Tangible and intangible assets	31,304		31,304
7.	Long-term investments	33,061		33,061
8.	Other assets	4,813		4,813
9.	Reserves on other items in assets, apart from loans	10		10
Total assets		**658,055**	**-54,272**	**603,783**
LIABILITIES				
10.	Liabilities on loans	315,423		315,423
11.	Other liabilities	31,058		31,058
12.	Capital	311,574	-54,272	257,302
Total liabilities		**658,055**	**-54,272**	**603,783**
13.	Off-balance sheet records	226,342	54,272	280,614

Source: FBA (2021) and own work

Tables 28 and 29 demonstrate that the delinquent portfolio had a significant impact on the reduction of the total portfolio and, consequently, the capital (via the costs of provisions for loan losses in the Income statement). In that case, both of these balance positions would decrease significantly.

The risk portfolio indicator for more than 30 days in default (PAR>30 days) as of December 31, 2020 amounts to 1.41% at the level of the microcredit sector (FBA, 2021). This risk indicator of the microloan portfolio at the sector level, despite the pandemic and disturbed economic and business environment, is within the prescribed standard (below 5%).

The rate of write offs of microloans as of December 31, 2020 amounted to 1.21%, which is also within the prescribed standard (below 3%). The movement of the trends of the portfolio at risk over 30 days and write off ratio completely justifies the adoption of a modified decision for credit risk management in order to mitigate the negative effects of the pandemic and preserve the microcredit sector. However, in the case of the previously explained simulation, there is a significant disturbance in the trend of the write-off indicator.

Table 30: Simulation of write off portfolio, 2020

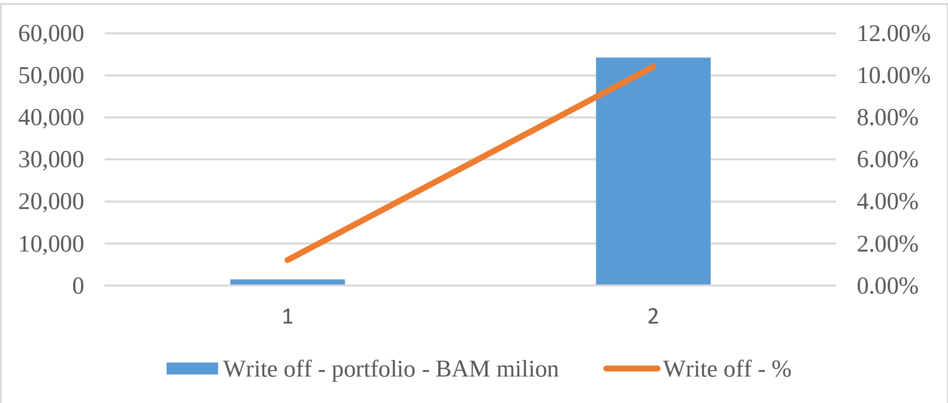
No.	Indicator	2020	Simulation effects
1.	Write off (BAM thousand)	1.428	54.272
2.	Write off (in %)	1.21%	10.41%

Source: own work

Regarding the impact on the credit portfolio's key indicators, under the same supposition, the write-off indicator would skyrocket to 10.41%, which is 9.2 index points higher than the indicator calculated based on the valid decision during the pandemic, which is presented in Table 30. In case of simulation, this indicator shows a significant amount of written-off loans that negatively impacts the quality of the portfolio, and is three times higher than the prescribed standard (below 3%).

As illustrated in Figure 7, simulation of write off portfolio shows a huge increase in write-offs in absolute and percentage amount.

Figure 7: Simulation of write off portfolio



Source: own work

Following up to presented figures, in Table 31 is calculated the indicators of profitability, return on assets and return on capital. However, in the case of simulation results and a realized negative result in 2020, as well as a decrease in total assets and capital, would lead to negative ROA and ROE indicators, which is shown in Table 31.

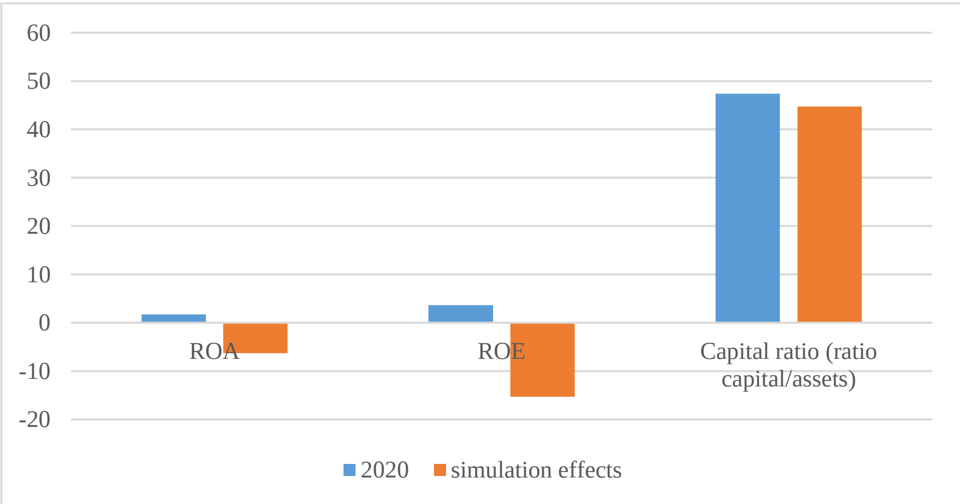
Table 31: Simulation of profitability indicators, 2020

No.	Indicator	2020	simulation effects
1.	ROA (in %)	1.71	-6.29
2.	ROE (in %)	3.61	-15.31
3.	Capital ratio (ratio capital/assets) (in %)	47.36	44.75

Source: own work

From Figure 8, a huge discrepancy can be seen in the simulated profitability indicators, which would have been negative if the Banking Agency of the Federation of Bosnia and Herzegovina had not made a decision, which would have threatened the stability of the microcredit sector and the uncertainty of the continuation of operation.

Figure 8: Simulation of profitability indicators, 2022



Source: own work

From the above, it can be concluded that if the FBA did not pass the Decision on temporary measures for leasing companies and microcredit organizations to ensure recovery from the negative economic consequences caused by Covid-19, at least 50 percent of the total portfolio amounting of BAM 106 million (for which one of the measures was approved) would have influenced the reduction of capital through the financial result of that year via write-offs and provisions. Considering that the total surplus of income over expenditures for the year 2020 was BAM 11 million, the measures have multiple effects.

It is important to note that the Banking Agency of the Federation of Bosnia and Herzegovina's decision had a positive effect not only on the overall operations of MCOs but also on the continuation of work for microcredit clients. Some of them did not perform their jobs during the pandemic, and the decision allowed them a delay in paying their obligations or some other special measure to overcome the newly created situation.

The significance of the successful activities undertaken by the Banking Agency of the Federation of Bosnia and Herzegovina during the pandemic is further confirmed by the continued trends of two portfolio quality parameters that are far below regulatory requirements even after the pandemic, during the years 2021 and 2022, resulting in the maintenance of a high-quality portfolio. This is fundamental to the microcredit industry's continued existence and stability. All of the aforementioned evidence demonstrates that the Banking Agency of the Federation of Bosnia and Herzegovina played a crucial role in ensuring the stability of the sector during the pandemic by implementing regulatory regulations. It thus protected and ensured long-term conditions for the unaffected continuation of the growth of the microcredit sector.

9 CONCLUSION

The pandemic caused by the Covid-19 pandemic has had a significant impact on economies all around the world, particularly those that are weak, and it is imperative that the entire microfinance industry respond in a responsible manner. In March 2020, Bosnia and Herzegovina was affected by the pandemic caused by the Covid-19 pandemic. On March 16, 2020, in response to recommendations from the World Health Organization, the Government of the Federation of Bosnia and Herzegovina announced a state of emergency.

The research that was carried out for the purpose of this thesis revealed three significant challenges: the inability to meet with clients in person; difficulties associated with collecting repayments; and complexities in the distribution of loans. Due to the actions taken by the Banking Agency of the Federation of Bosnia and Herzegovina during the pandemic, microcredit organizations in the Federation of Bosnia and Herzegovina were able to maintain approximately the same level of key portfolio quality parameters and write off with a slight decline that remained significantly below the regulatory amounts. The risk portfolio indicator for more than 30 days in default (PAR>30 days) as of December 31, 2020 amounts to 1.41% at the level of the microcredit sector and it increased by 0.55 percentage points compared to December 31, 2019. while the rate of write-offs of microloans as of December 31, 2020 amounted to 1.21%, and compared to December 31, 2019, it rate rose by 0.34 percentage points. Although there was a minor increase in these parameters, it had an effect on the increase in Loan Losses Provision but it had no effect on the decrease in the microcredit sector's portfolio, assets, and profitability. The exact opposite happened.

The Banking Agency of the Federation of Bosnia and Herzegovina played a crucial role in preserving the microcredit sector by making the necessary credit risk management decisions promptly following the declaration of the pandemic. The adopted Decision on Temporary Measures of Leasing Companies and Microcredit Organizations to Ensure Recovery from the Negative Economic Consequences of the Covid-19 pandemic required the February 29, 2020 stoppage of the days past due counter for the duration of the temporary measures. The timing of the aforementioned Decision had a significant effect on the calculation of portfolio quality indicators, portfolios at risk for more than 30 days, and portfolios written off after that Loan loss provision, which directly impacts portfolio quality and business outcomes. The effects of the regulator's decisions were mitigated, and conditions were set for economic recovery.

As a result of the aforementioned decision, the microcredit industry remained strong and stable. This is inferred from the growth of the loan portfolio and total assets, with the key indicators of the portfolio's quality remaining significantly below the prescribed levels. This had a direct impact on the profitability of the microcredit sector during the pandemic due to the realization of an income surplus over expenditures. At the end of 2020, the microcredit sector achieved a positive financial result in the amount of 11,3 million BAM (FBA, 2021) thereby preserving the capital sector.

After analyzing all of the data presented in this thesis, the following conclusions can be made: the operations of the microcredit sector in 2020 are characterized by growth in assets, gross credit placements, and capital, but also growth in the value of loans in arrears and the achievement of a positive financial result compared to the previous year.

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APPENDICES

Appendix 1: Povzetek (Summary in Slovene language)

Upravljanje rezervacij za izgube posojil v mikrokreditnih organizacijah: primer Federacije Bosne in Hercegovine v času pandemije.

Finančni trg v Bosni in Hercegovini je prostor, kjer se srečujeta ponudba in povpraševanje po finančnih dejavnostih. Večina transakcij poteka prek bank, vendar so se kot pomembne finančne institucije izkazale tudi mikrokreditne organizacije. Mikrokreditne organizacije (MKO) so finančne institucije, ustanovljene v državah z visokim deležem revnega prebivalstva, pogosto brezposelnega in brez stalnih virov dohodka. Razvoj mikrokreditnih organizacij v Bosni in Hercegovini se je začel leta 1996 in je urejen z zakoni entitet.

Pandemija Covid-19 je bolj ekstremno in nenadno vplivala na realno gospodarstvo, saj je hkrati zadušila ponudbo in povpraševanje. Številnim mikro in malim podjetjem je bilo naloženo, da se zaprejo ali najdejo druge načine za doseganje strank ter prodajo svojih izdelkov in storitev. To je zelo obremenilo mikrofinančne institucije, ki so se morale spopadati s svojimi težavami, da so v času karantene in omejitev lahko še naprej opravljale svojo osnovno dejavnost.

Cilji magistrskega dela so bili predstaviti regulativni okvir za upravljanje kreditnega tveganja mikrokreditnih organizacij pred pandemijo v Federaciji Bosne in Hercegovine ter razumeti pomen pravil, določenih s Sklepom o začasnih ukrepih, ki ga lizinške družbe in mikrokreditne organizacije uporabljajo za blažitev neugodnih ekonomskih posledic, ki jih povzroča pojav virusne bolezni Covid -19, ter ugotoviti vpliv na ključne kazalnike kakovosti mikrokreditnega portfelja.

Pandemija Covid-19 je močno prizadela mikrofinančno industrijo v svetu, še posebej v Bosni in Hercegovini. Vlada je kot odziv na virus razglasila izredne razmere, ki so povzročile nezmožnost srečanja s strankami, težave pri poplačilu in zapletenost pri razdeljevanju posojil. Kljub tem izzivom so mikrokreditne organizacije v Bosni in Hercegovini ohranile ključne parametre kakovosti portfelja v okviru regulativnih standardov. Ključno vlogo pri ohranitvi mikrokreditnega sektorja je odigrala Agencija za bančništvo Federacije Bosne in Hercegovine, ki je takoj po razglasitvi pandemije sprejela potrebne odločitve o obvladovanju kreditnega tveganja. S sprejetim Sklepom o začasnih ukrepih lizinških družb in mikrokreditnih organizacij za zagotovitev odprave negativnih gospodarskih posledic virusa Covid-19 je bila za čas trajanja začasnih ukrepov do 29. 02. 2020 odrejena prekinitev štetja zamud v dnevih, kar je neposredno vplivalo na ohranjanje kakovosti portfelja.

Sprejetje omenjenega Sklepa je pomembno vplivalo na izračun kazalnikov kakovosti portfelja, tveganega portfelja nad 30 dni in odpisanega portfelja, ter posledično na stroške oblikovanja rezervacij za kreditne izgube, kar neposredno vpliva na kakovost portfelja in poslovne rezultate. Učinke so omilile odločitve regulatorja in ustvarile pogoje za oživitev gospodarstva. Pomembno je poudariti, da je izvršitev odločbe Agencije za bančništvo Federacije Bosne in Hercegovine pozitivno vplivala ne le na celotno poslovanje MKO, temveč tudi na nadaljevanje dela mikrokreditnih komitentov. Nekateri v času pandemije niso delali, sklep pa jim je omogočil odlog plačila obveznosti ali kakšen drug poseben ukrep za izhod iz novonastalih razmer.

Zaradi zgoraj omenjene odločitve je mikrokreditna panoga ostala močna in stabilna, kar se lahko sklepa iz kazalnikov rasti kreditnega portfelja in bilančne vsote, med pandemijo in po njej, pri čemer ostajajo ključni kazalniki kakovosti portfelja bistveno pod predpisano ravnijo. To je neposredno vplivalo na dobičkonosnost mikrokreditnega sektorja v času pandemije zaradi presežka prihodkov nad odhodki. Mikrokreditni sektor je ob koncu leta 2020 dosegel pozitiven finančni rezultat v višini 11,3 mio KM (FBA, 2021), s čimer je ohranil kapital ter zaščitil in zagotovil dolgoročne pogoje za nemoteno nadaljevanje rasti mikrokreditnega sektorja.

Appendix 2: Sector and maturity structure of microloans 2020

Table 32: Sector and maturity structure of microloans 2020 (BAM thousand)

No.	Microloans	Short term microloans	Long-term microloans	Past-due receivables	Total	%
1	2	3	4	5	6=3+4+5	7
1.	Corporate					
a)	Services	286	8,360	18	8,664	55.8
b)	Trade	116	3,003	9	3,128	20.2
c)	Agriculture	19	1,121	0	1,140	7.3
d)	Manufacturing	92	2,329	9	2,430	15.7
e)	Other	38	115	0	153	1.0
Total 1		551	14,928	36	15,515	100
2.	Retail					
a)	Services	3,136	90,820	208	94,164	18.1
b)	Trade	680	12,620	36	13,336	2.6
c)	Agriculture	5,476	162,920	245	168,641	32.5
d)	Manufacturing	386	11,943	26	12,355	2.4
e)	Housing needs	3,549	115,098	207	118,854	22.9
f)	Other	18,542	92,933	813	112,288	21.6
Total 2:		31,769	486,334	1,535	519,638	100
Total (1+2):		32,320	501,262	1,571	535,153	-

Source: FBA (2021)

Appendix 3: Overview of average weighted NIR and EIR for MCOs 2020

Table 33: Overview of average weighted NIR and EIR for MCOs 2020

No.	Indicator	Number of conclude contracts	Microloans disbursement (BAM thousand)	Weighted NIR (average) %	Weighted EIR (average) %
1.	**Short term microloans for:**	**47,026**	**63,022**	**20.29**	30.69
1.1.	Services	3,384	6,515	20.66	27.04
1.2.	Trade	749	1,735	20.47	27.27
1.3.	Agriculture	6,934	10,972	20.12	25.66
1.4.	Manufacturing	409	914	19.37	25.36
1.5.	Housing needs	3,244	5,945	20.59	25.56
1.6.	general-basic needs	24,650	28,078	21.05	37.74
1.7.	Other	7,656	8,863	17.52	21.79
2.	**Long term microloans for:**	**85,168**	**391,102**	**18.90**	22.90
2.1.	Services	14,766	73,125	18.23	20.96
2.2.	Trade	2,459	12,129	17.96	20.96
2.3.	Agriculture	23,343	121,828	17.68	20.38
2.4.	Manufacturing	2,211	12,279	17.90	20.37
2.5.	Housing needs	13,973	81,474	19.27	22.38
2.6.	general-basic needs	16,579	54,244	22.25	26.99
2.7.	Other	11,837	36,023	19.06	31.71
3	**Total microloans**	**132,194**	**454,124**	**19.10**	**23.98**

Source: FBA (2021)

Appendix 4: Comparative overview of average weighted NIR and EIR for MCOs

Table 34: Comparative overview of average weighted NIR and EIR for MCOs

Average weighted NIR on (%):	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***
Short-term microloans	17.46	20.11	21.40	20.80	20.29	20.18	20.22
Long-term microloans	20.81	20.38	19.63	19.29	18.90	19.22	18.83
Total microloans	**20.18**	**20.34**	**19.89**	**19.51**	**19.10**	**19.34**	**18.98**
Average weighted EIR on:	***2016***	***2017***	***2018***	***2019***	***2020***	***2021***	***2022***
Short-term microloans	26.71	28.29	29.11	31.85	30.69	29.22	28.90
Long-term microloans	24.75	24.22	23.27	23.09	22.90	23.26	22.65
Total microloans	**25.12**	**24.86**	**24.13**	**24.38**	**23.98**	**24.00**	**23.30**

Source: FBA (2021)

Appendix 5: Special measures 2020

Table 35: Special measures 2020 (BAM thousand)

	The number of debtors who submitted a request	Gross amount of the loan for which the application was submitted (000 BAM)	The total number of debtors for whom the request was approved	Active special measures							Expired special measures	
				Number of debtors	Gross loan amount (000 BAM)						Number of debtors	Gross loan amount (000 BAM)
					Total	of which: moratorium	of which: "grace"	of which: a combination of moratorium and "grace"	of which: additional loan amount	of which: other		
1. Corporate (1.1. do 1.5.)	474	8,594	456	302	4,991	108	181	18	0	4,684	154	2,709
1.1. Services	295	5,128	284	194	3,181	84	62	0	0	3,035	90	1,477
1.2. Trade	104	1,948	101	67	1,086	24	69	18	0	975	34	680
1.3. Agriculture	16	400	14	9	225	0	0	0	0	225	5	116
1.4. Manufacturing	53	1,064	51	31	489	0	40	0	0	449	20	392
1.5. Other	6	54	6	1	10	0	10	0	0	0	19	192
2. Retail (2.1. do 2.5.)	23,567	127,789	22,097	8,457	49,311	5,635	4,264	586	308	39,519	13,626	49,790
2.1. Services	5,676	29,065	5,418	1,914	9,121	1,693	1,518	119	22	5,766	3,504	11,513
2.2. Trade	1,245	6,204	1,168	490	2,338	294	242	53	13	1,736	678	2,105
2.3. Agriculture	5,384	38,096	5,067	2,438	18,401	1,021	699	226	22	16,427	2,629	13,267
2.4. Manufacturing	534	2,981	509	197	971	163	136	0	10	661	312	1,218
1.5. Other	9,002	34,767	8,279	2,241	8,253	1,464	1,669	72	241	4,818	6,038	16,176
3. Total (1. + 2.)	**23,809**	**135,892**	**22,325**	**8,751**	**54,272**	**4,713**	**4,445**	**604**	**308**	**44,203**	**13,574**	**52,200**

Source: FBA (2021)